ENGINEERING NEWS-RECORD

Stanley Dore: Water scout for eight million people p.64

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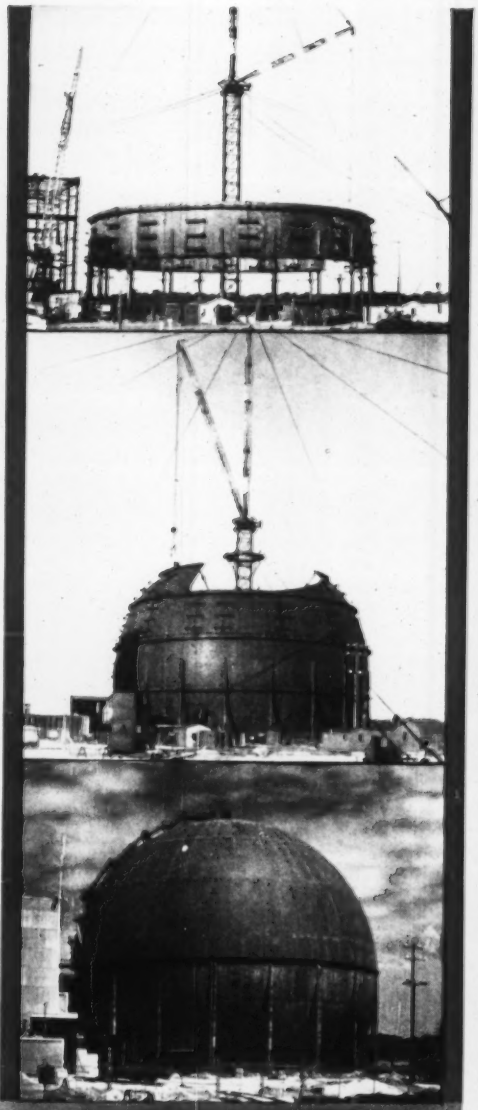

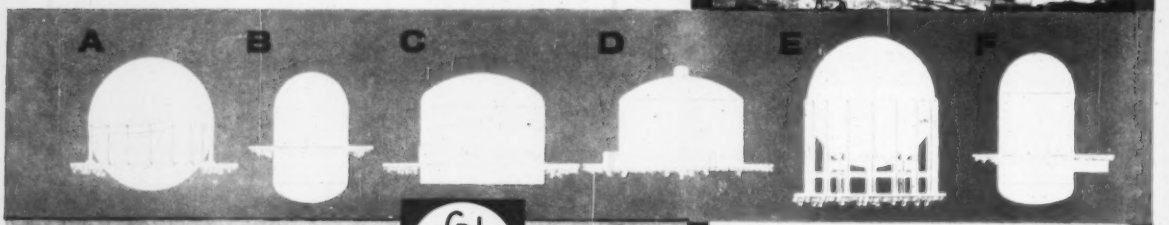

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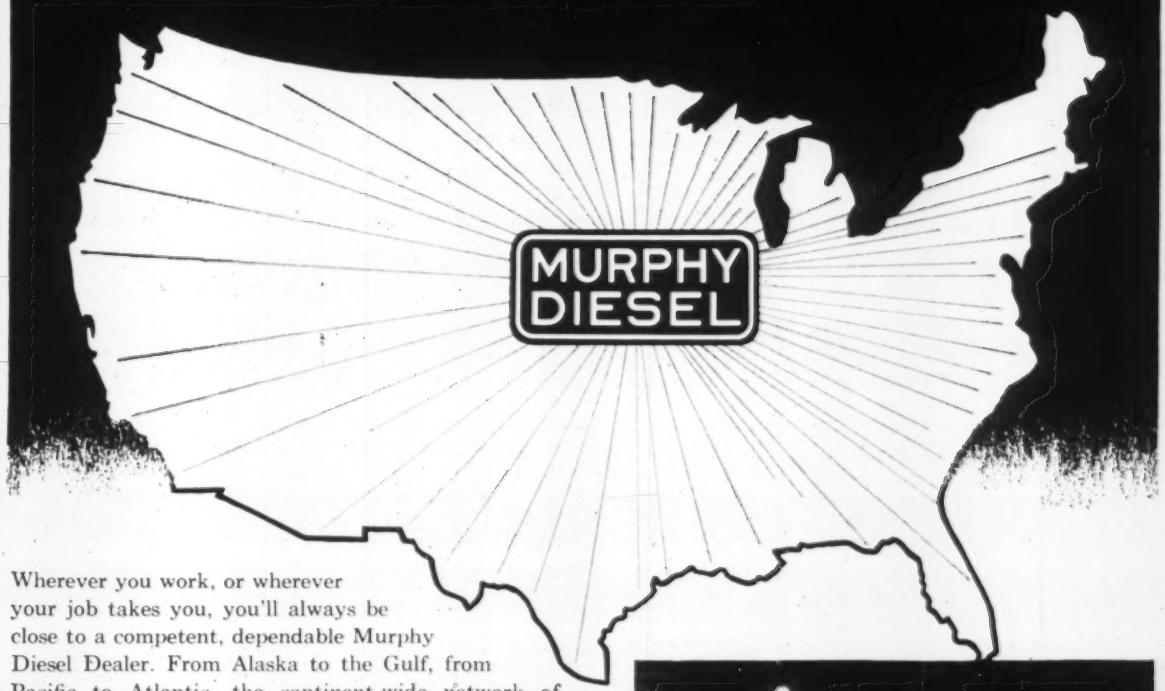

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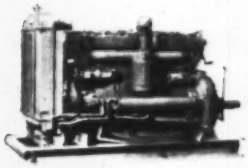

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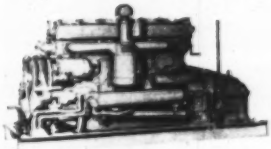

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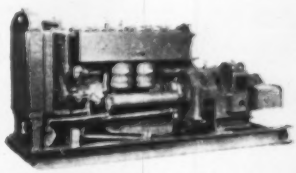

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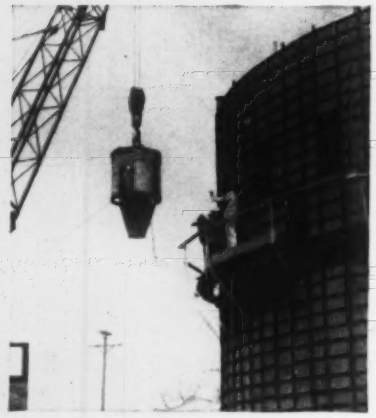

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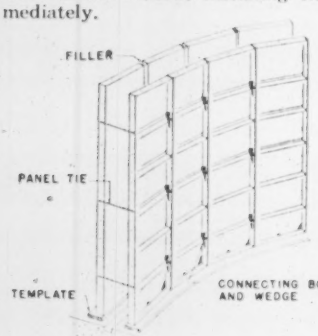

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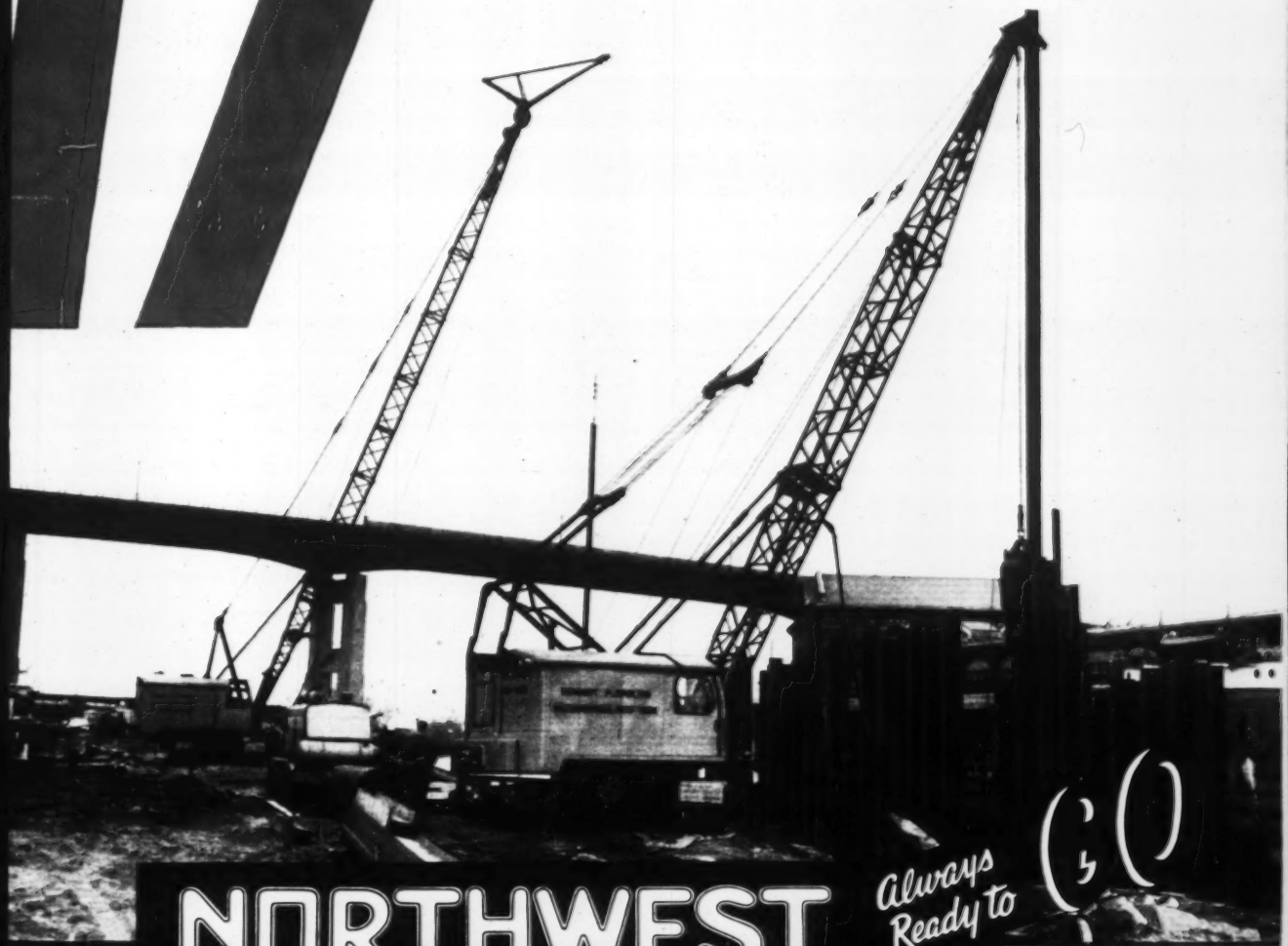

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Flexible Pipe Needs Ruggedness Factor

Sir—Present practice in the design of flexible metal pipe is too optimistic. Design standards that account only indirectly for loads imposed and conditions of support contrast sharply to the design of any other type of engineering structure.

Unforseen loading, bedding, and other conditions are more likely to cause failures because of a liberal design that provides little margin of reserve strength to meet the unexpected. The ruggedness of the flexible pipe should be increased to compare favorably with the strengths of rigid pipe installed to meet similar conditions.

Present design is based on the assumption that the flexural strength of the metal pipe enables it to distort within certain limits and thereby render more uniform the supporting action of the backfill.

The manufacturers' recommended design for flexible pipe is based fundamentally on the theoretical passive resistance of the side supporting materials and no discrimination is made for type of soil. No strength factors are allowed for, such as done for rigid pipe when different required strengths are specified for the various types of bedding.

Though some variation is made for strutted pipe, there is no proportionate increase of the pipe gage for varying sizes, nor does the gage increase in proportion to cover increase. In the case of projected bedding conditions in embankments, no consideration—except for a limitation on depth of cover under roads—is given to construction equipment loads or to other special loads which may possibily occur over these pipes.

This method of design where only the variables of diameter, cover and gage are considered is overly simplified and may be dangerous. It tends to lead the engineer into pushbutton design and consequently neglect important factors.

While it may be true that the supporting action of the backfill is uniform, the pipe itself has been distorted. It then must take tangential compression which develops certain eccentricities—resulting in a high combination of bending and direct stresses in the pipes.

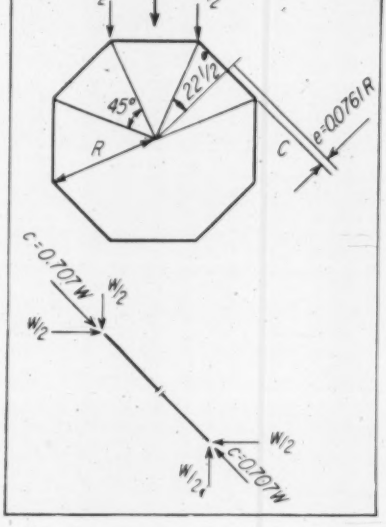
The writer is recommending in his publications that the strength of metal pipe to meet these stresses should be increased by the introduction of a factor of ruggedness. This strength factor should be included in an arbitrary rule which can be conveniently applied. I suggest that for certain conditions the design of metal pipe be based on its 3-edge bearing strength, instead of using manufacturers' recommended height of cover.

The three-edge bearing strength should be used when the height of fill exceeds 30 ft or when the pipe diameter is 48 in. or larger. The pipe with more than 30 ft height of cover, but without lateral support, would tend to have a thrust in the neighborhood of ultimate unit stress.

However, I prefer to use reinforced concrete pipe for heights of fill between 30 and 50 ft and for pipe 48 in. in diameter or greater, because of scour and corrosion. For more than 50 ft cover I recommend a reinforced concrete structural culvert.

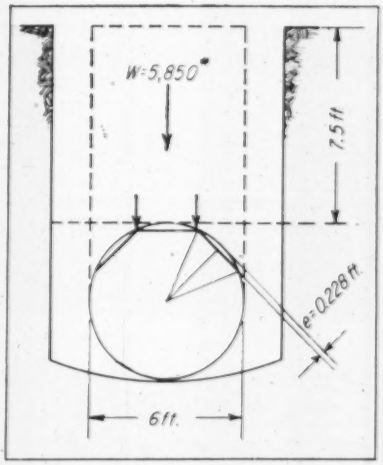
Use of the 3-edge bearing strength of metal pipe as the basis of design results in a pipe whose physical specifications are well within reasonable limits.

Design of the pipe to provide for eccentric stress in the problem below depends on a strength factor based on an inscribed polygon. This method will give a crude approximation of the results obtained with the more complex derivation of the three-edge bearing strength—and is used only to show, simply and quickly, what can be expected with the more sophisticated 3-edge bearing strengths.



Factor of ruggedness based on inscribed polygon.

Problem—Design flexible metal pipe for loading condition shown in the following sketch.



Answer—based on design from manufacturer's handbook—(Table for gages of corrugated metal pipe for H-20 live load)

Use #10 gage corrugated metal pipe. This pipe has a section modulus of 0.01407 in.³/in. and a weight of 130.4 lb/lin. ft.

Answer—based on factor of ruggedness and a flexural stress limitation of 20,000 psi.

$$W = 5{,}850 \text{ lb.}$$

$$C = 0.707W = 4{,}140 \text{ lb.}$$

$$r = 0.0761R = 0.0761(3) = 0.228 \text{ ft.}$$

$$\text{Required Section Modulus} = C \times r$$

$$\text{Allowable Flexural Stress} = \frac{4{,}140 \times 0.228}{20{,}000} = 0.0471 \text{ in.}^3\text{/in.}$$

from manufacturer's handbook—(table of physical properties of multi-plate pipe)

#12 gage multi plate pipe meets the requirements with a section modulus of 0.0574 in.³/in. and a weight of 130 lb/lin. ft.

The results of the problem show that without a factor of ruggedness a 10-gage standard corrugated pipe would be required; but that with the factor, a 12 gage multi-plate would be needed.

The longitudinal section modulus of a 12 gage multi-plate is five times that of a 10-gage standard pipe and the weight difference is negligible. While the multiplate is somewhat more expensive to install, it would be a small price to pay for the additional strength gained.

ELWYN E. SEELYE
Seelye, Stevenson, Value & Knecht
Consulting Engineers
New York, N. Y.

(Reader Comment continued p. 13)

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saves $175,000

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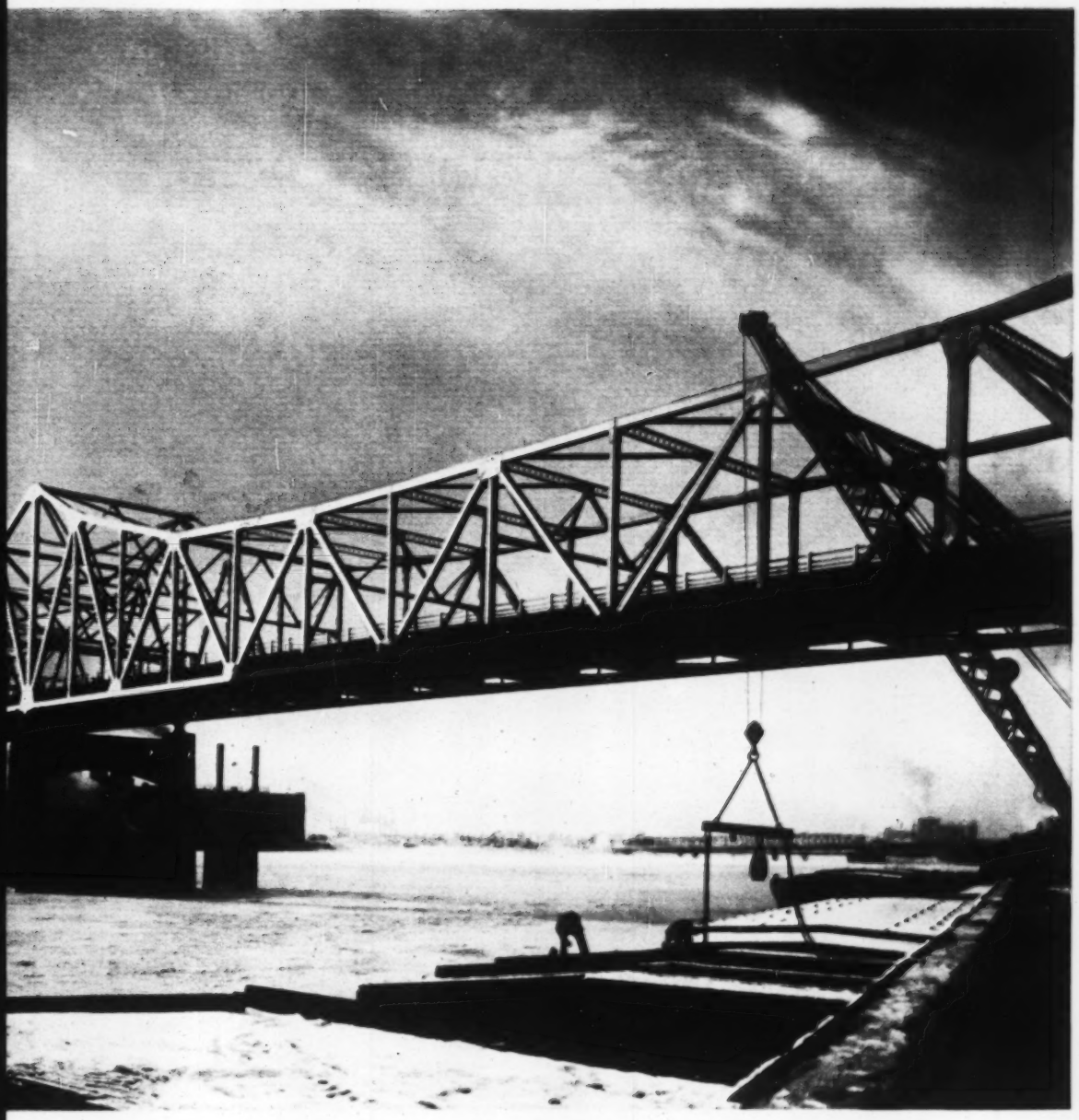
Five-span cantilever bridge, Peoria, Illinois, carrying two 26-foot roadways. Total length of spans—2,340 feet. Designer: State of Illinois, Dept. Public Works and Buildings, Division of Highways. Fabricator: Allied Structural Steel Cos. Erection by Industrial Construction Co.

$175,000 was saved by the use of USS TRI-TEN Steel in heavily stressed chords and diagonals, where it eliminated 850 tons of deadweight.

This spanking new Illinois River Bridge at Peoria takes advantage of the cost-saving features of high strength steel. USS TRI-TEN Steel was used wherever it would save money—and this was in most of the chord members and about 70% of the diagonals. These parts could be made thinner and lighter because of TRI-TEN Steel's minimum yield point of 50,000 psi. The bridge is all of 850 tons lighter than conventional construction would have been.

From 20 to 40% less steel was used in the high-strength low-alloy steel members. Less complicated members and fewer side plates was another consequence of using TRI-TEN Steel, leading to lower fabrication and erection costs—and, ulti-



mately, fewer maintenance problems. It is estimated that $175,000 was saved by using TRI-TEN Steel.

USS TRI-TEN Steel is particularly recommended for welded structures. It has good workability and superior resistance to atmospheric corrosion and meets all the requirements of ASTM Specification A242.

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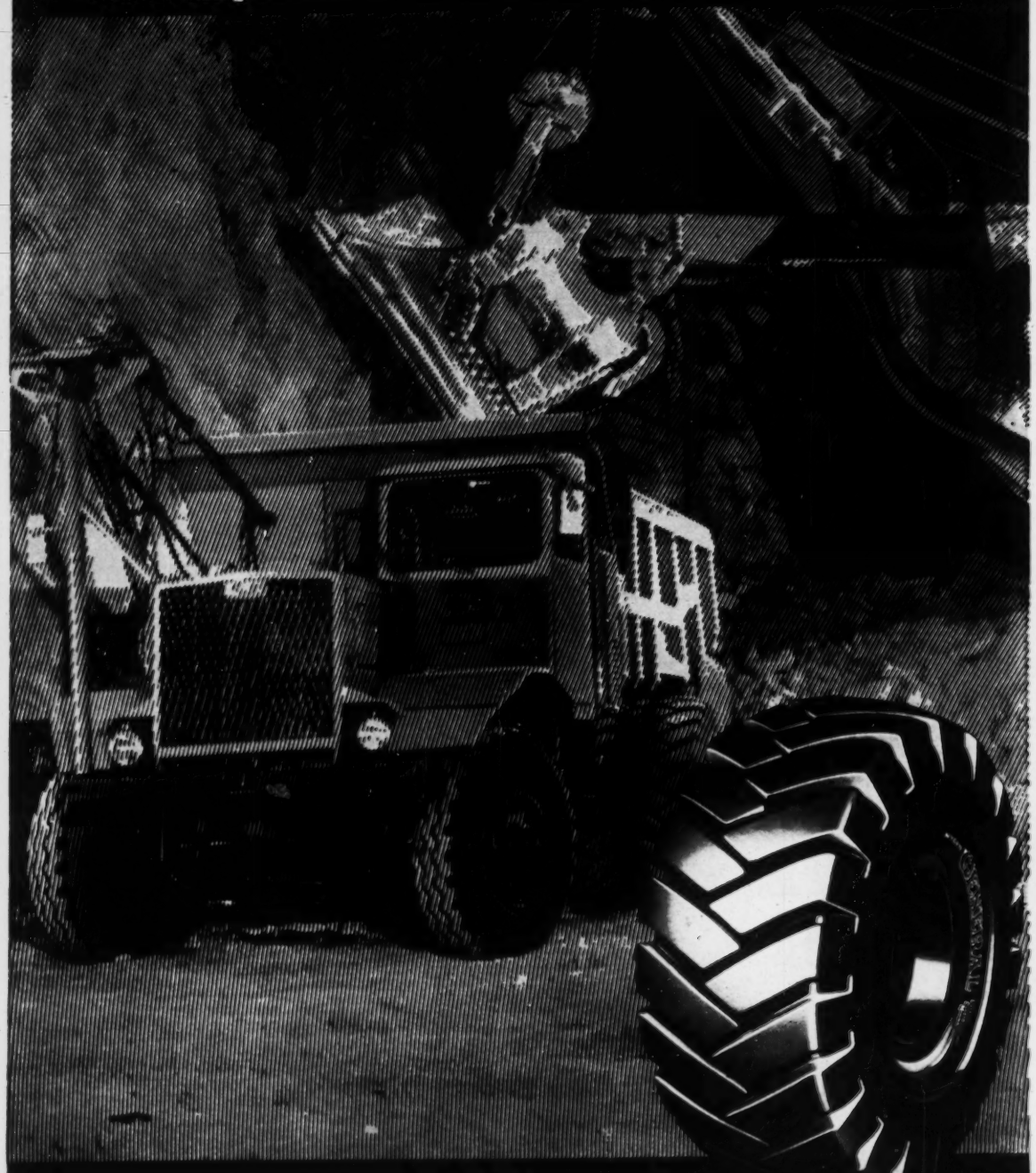

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THE GENERAL TIRE & RUBBER COMPANY, AKRON, OHIO

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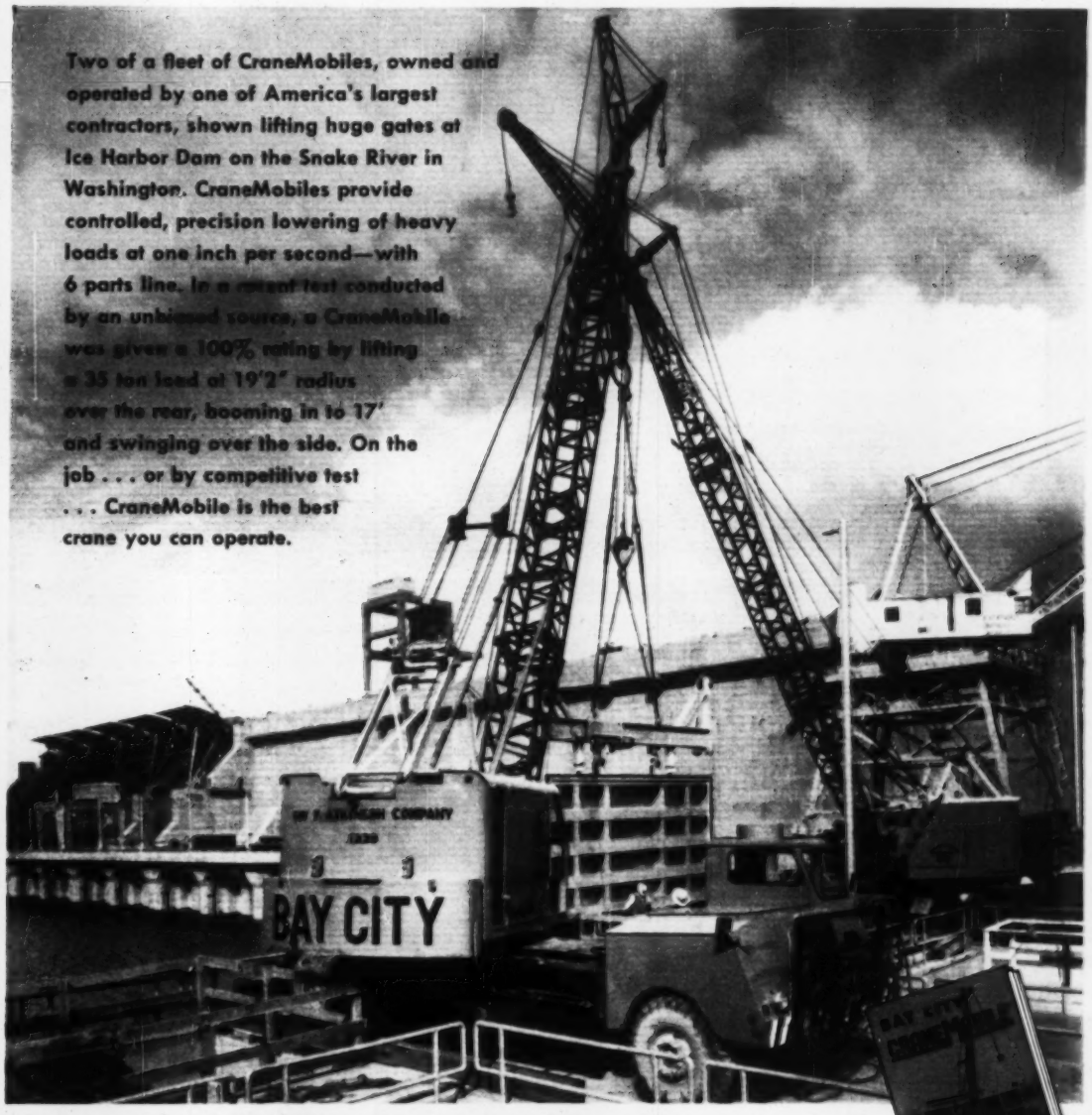

Two of a fleet of CraneMobiles, owned and operated by one of America's largest contractors, shown lifting huge gates at Ice Harbor Dam on the Snake River in Washington. CraneMobiles provide controlled, precision lowering of heavy loads at one inch per second—with 6 parts line. In a recent test conducted by an unbiased source, a CraneMobile was given a 100% rating by lifting a 35 ton load at 19'2" radius over the rear, booming in to 17' and swinging over the side. On the job . . . or by competitive test . . . CraneMobile is the best crane you can operate.

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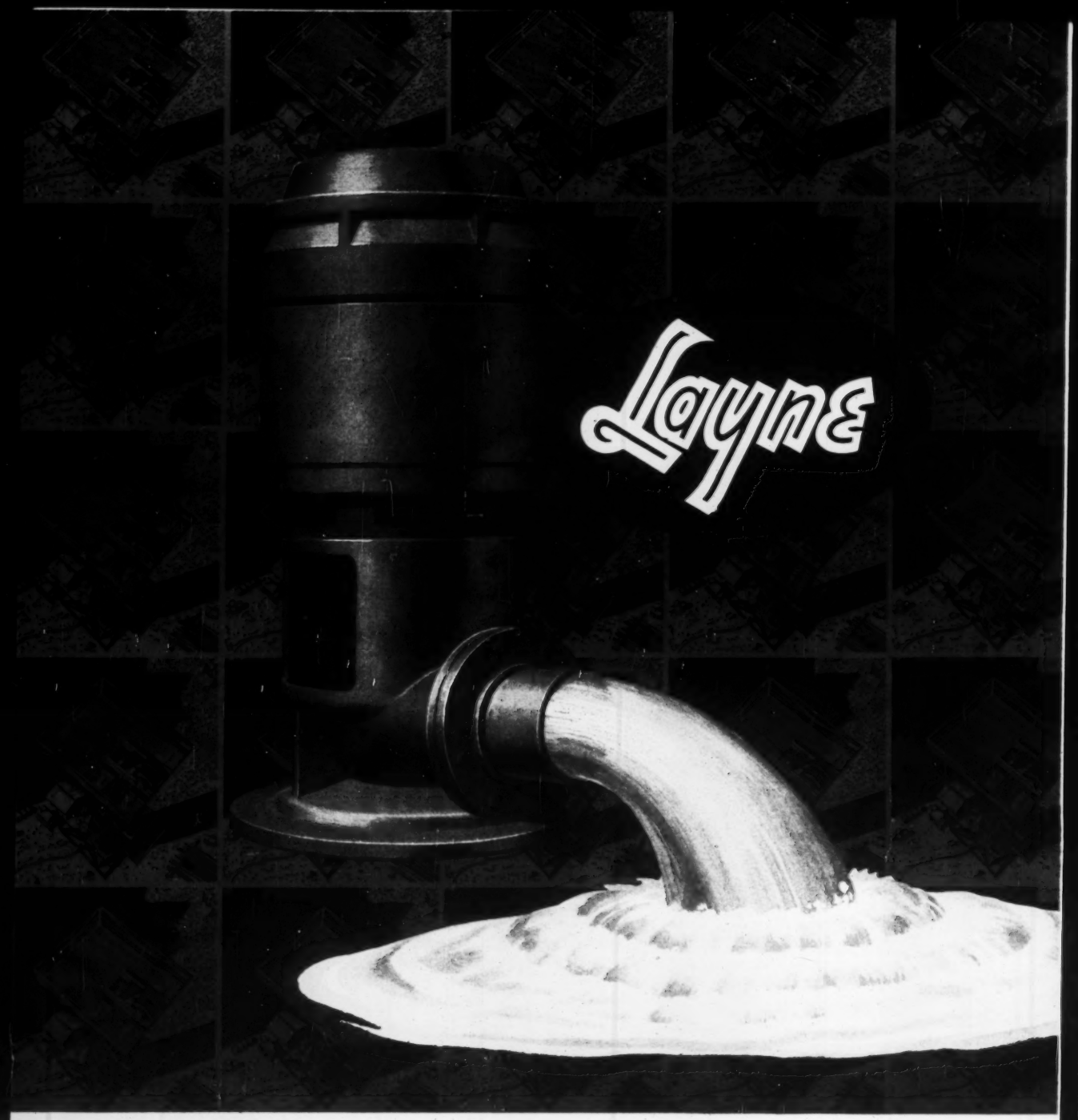
THE WORLD'S BEST BUILT SHOVELS AND CRANES

BAY CITY SHOVELS INC., BAY CITY 1, MICHIGAN

284

11



Layne pumps top more producing water wells

Layne Pump Design, manufacture and installation are only part of the complete water service offered by the Layne organization. Other services include: Initial surveys, explorations, recommendations, site selection, foundation and soil sampling, well drilling, well casings and screens, gravel wall wells, construction of water systems, complete research staff and facilities, maintenance and service, chemical treatment of water wells, water treatment. *Write for Bulletin No. 100.*

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Chantilly's Mobile Lounges

Sir—We note with interest an article entitled "New Airport Drops Long Walk" (ENR April 9, p. 23), which discusses the use of buses between terminal buildings and aircraft.

This is by no means an original or revolutionary idea. Buses have been used for transportation of passengers between the airport terminal and aircraft for many years in Europe.

This arrangement, however, leaves something to be desired since, when the bus arrives at the aircraft, the passengers must step out of the bus and mount the steps into the aircraft. In bad weather this is a decidedly annoying procedure. Also, a considerable amount of time is lost in transferring the passengers to the aircraft.

Quite a number of years ago our company began developing a bus designed to avoid these difficulties. By having the bus so mounted that it can be elevated to line up with the door of the aircraft, it is possible to embark directly from the bus.

The design is for a bus with overall dimensions that would permit it to operate on highways. It was felt that such a bus would be operated from the downtown terminal in the case of small airports and that the airport passenger facilities could be eliminated entirely. In the majority of cases, however, the use of the bus would be restricted to conveying passengers within the confines of the airport.

Still another design is of a very large through-loading bus that is entered at one end and discharged at the other end, as shown in the illustration heading your article. This bus has a seating capacity of 75 to 80 or more for, since the bus need not be restricted to over-all dimensions permitted on highways.

The design is covered by both Canadian and American patents.

A. M. HURTER
Chief Engineer
Stadler, Hurter & Co.
Montreal, Canada

▶ It is heartening to find that, finally, the obsolete criteria that have so far guided the planning and construction of our major airports are being discarded in favor of more logical and far-sighted solutions. The introduction of an intermediary carrier between the terminal and the airplanes will go a long way toward solving the operational problems confronting air transportation.

You state in your article: "The idea was originated and sold to the airline companies by Ammann & Whitney of New York City, prime consultants, and Eero Saarinen & Associates of Birmingham, Mich., Burns & McDonnell, Kansas City mechanical and electrical engineers, and Ellery Husted, architect, master planning adviser."

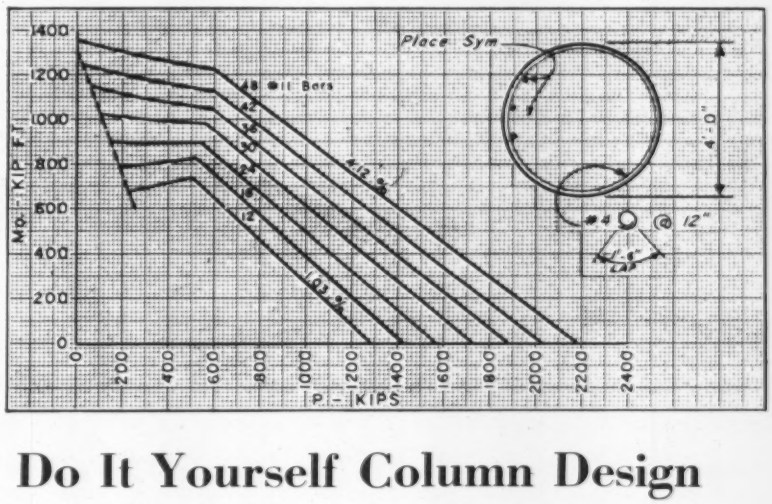
To Eero Saarinen et al goes indeed the credit for having sold the concept to the airline companies, a task that I am sure demanded strenuous dedication. The credit for the origin of the idea, however, rests with this firm, as you will find in the PROGRESSIVE ARCHITECTURE magazine of December, 1957.

EDGARDO CONTINI, *Partner*
Victor Gruen Associates
Beverly Hills, Calif.

EDITOR'S NOTE—Ammann & Whitney claim only to be the first to achieve commercial application of the mobile lounge concept in this country. Engineering News-Record reported the Victor Gruen Associates' airlines terminal design in ENR June 5, 1958, p. 52.

▶ While you're building such a conveyance, why not go all the way. Put the operator in a plastic bubble on the top with a local or closed circuit TV there. To avoid climbing stairs or a ramp, provide a hydraulic lift system. We sure should travel first class all the way.

WILLIAM F. RYAN
Consulting Engineer
Salina, Kan.



Do It Yourself Column Design

Sir—The article "Computer Speeds Column Design" (ENR May 14, p. 64) might lead readers to believe that an electronic computer is required to construct design charts for round columns.

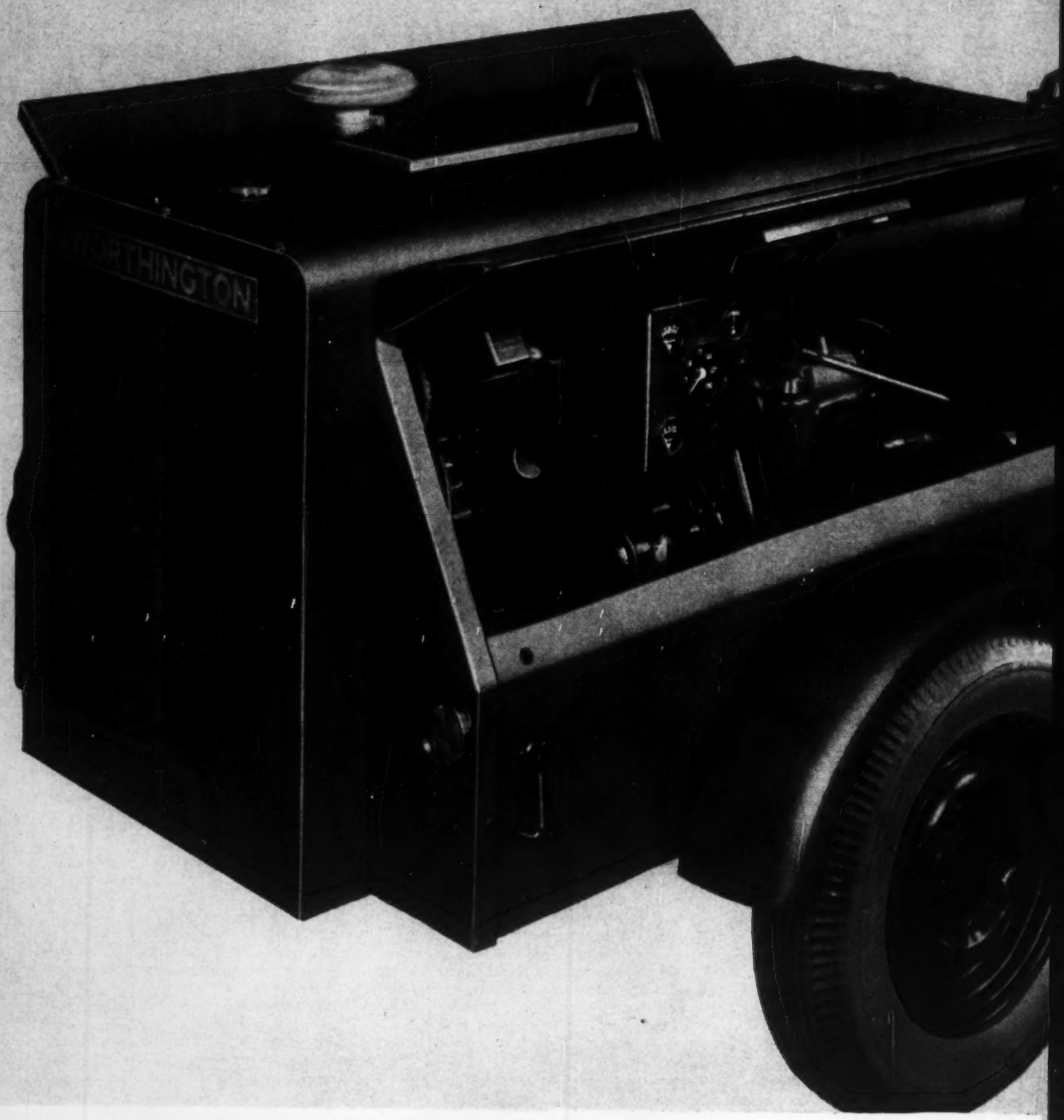
There is little question that a computer may be advantageous if a lot of charts are to be made to cover a number of design conditions. However, if a computer with a suitable program is not available, identical charts can be economically made with just a slide rule and other charts which are universally available.

This is how we have been constructing charts for tied and spirally reinforced columns of 3-, 4-, 5- and 6-ft. diameters. The portions of the charts assuming cracked sections were made by plotting a few points for varying quantities of reinforcing calculated with the use of the charts in ACI's Reinforced Concrete Design Handbook. At first glance this procedure appears to be an overwhelmingly laborious task. By arranging the necessary information in tabular and systematic form, however, a great number of points can be calculated in a relatively short time.

The portions of the charts covering the uncracked column sections were plotted by using ACI specifications but with a limit of $e/t = 0.5$. Since only two points are required to establish a line for a given amount of reinforcement and intermediate lines can be interpolated graphically (they are not parallel), these portions of the charts can be made quite rapidly.

The different assumptions for the cracked and uncracked section designs are responsible for a discontinuity where they meet. In order to eliminate a sudden increase or decrease in the amount of required reinforcement for a column with loads in this region, we considered it desirable and logical to make minor adjustments and extend the lines for the cracked section to the right until they intersected the corresponding line for the uncracked section. This "adjusting" gives results somewhat on the conservative side.

ORIS H. DEGENKOLB
Charles J. McClun
Sacramento, Calif.



SPECIFICATIONS

COMPRESSOR

Normal operating pressure	100 lbs.
Maximum discharge pressure	125 lbs.
Rated capacity	1800 rpm.
No. of cylinders	1
Lubricating oil capacity	6 gals.
Compressed air storage capacity	1.5 cu. ft.
Oil separator	one stage
Air cleaner	dry type
Control	pneumatic
Pressure setting	75-125 lbs.
Differential	10 lbs.

ENGINE

Make	Continental Gas
Model	FA-162-2417
Type	4 cycle
No. of cylinders	4
Bore	3 7/16 in.
Stroke	4 3/8 in.
Oil in crankcase	4 1/2 qt.
Water cooling system capacity	9 qt.
Type of starter	Electric
Fuel tank capacity	17 3/4 gals.
Clutch—Make	Industrial
Type	Disc
Size	Single 8 in.
Hp at sea level	41 hp

DIMENSIONS (skid)

Length	79 in.
Width	27 in.
Height	43 1/2 in.
Net weight	1325 lbs.

DIMENSIONS (pneumatic tires)

Length	121 9/16 in.
Width	61 in.
Height	54 in.
Net weight	1730 lbs.
Tires, size and ply	6.40 x 15-4

Introducing the 85'

SUPER BLUE BRUTE ROTARY COMPRESSOR

The single stage compressor with two stage economy

At last, here is an 85' rotary compressor with two stage economy and single stage simplicity.

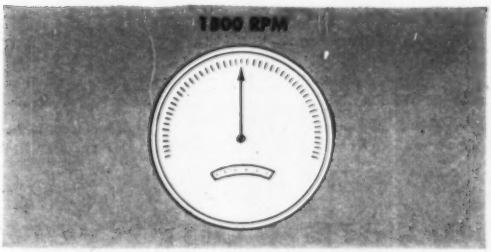
The new Super Blue Brute 85 will operate all day on a tankful of gasoline. This is because the engine runs at a gas-saving 1800 rpm instead of higher speeds.

You get economy without sacrificing power. The compressor is amply-powered with a 162 cubic inch engine that provides a horsepower reserve of over 50%. And like all Blue Brute rotaries, engine life is extended because a clutch allows you to warm-up the engine *without engaging the compressor.*

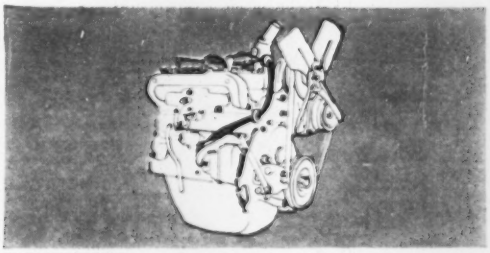
The new rotary is also versatile. It's designed for high speed towing with a low center of gravity, high speed tires, and a heavy tow bar. No matter what the terrain, you won't have any trouble operating this compressor. It will perform at versatile angles.

See your Blue Brute distributor for more information. Or write to Worthington Corporation, Section 60-19, Holyoke, Mass. In Canada: Worthington (Canada) Ltd., Brantford, Ontario.

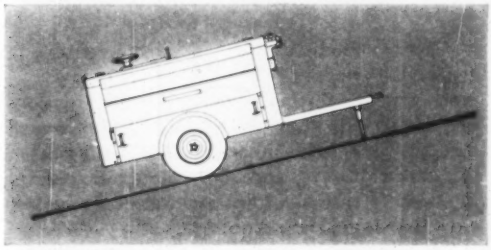
WORTHINGTON



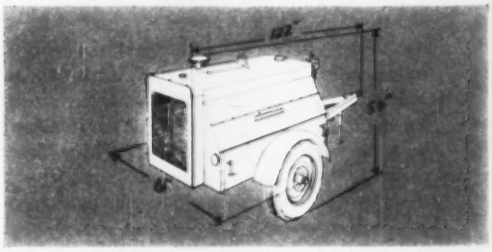
ECONOMICAL. For peak efficiency, engine operates at 1800 rpm instead of higher speeds.



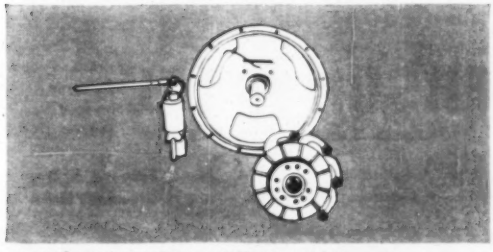
POWERFUL. Amply powered engine has a reserve capacity of over 50%. No altitude problems.



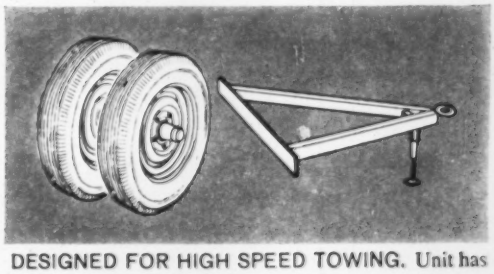
VERSATILE. Compressor can be operated at versatile angles.



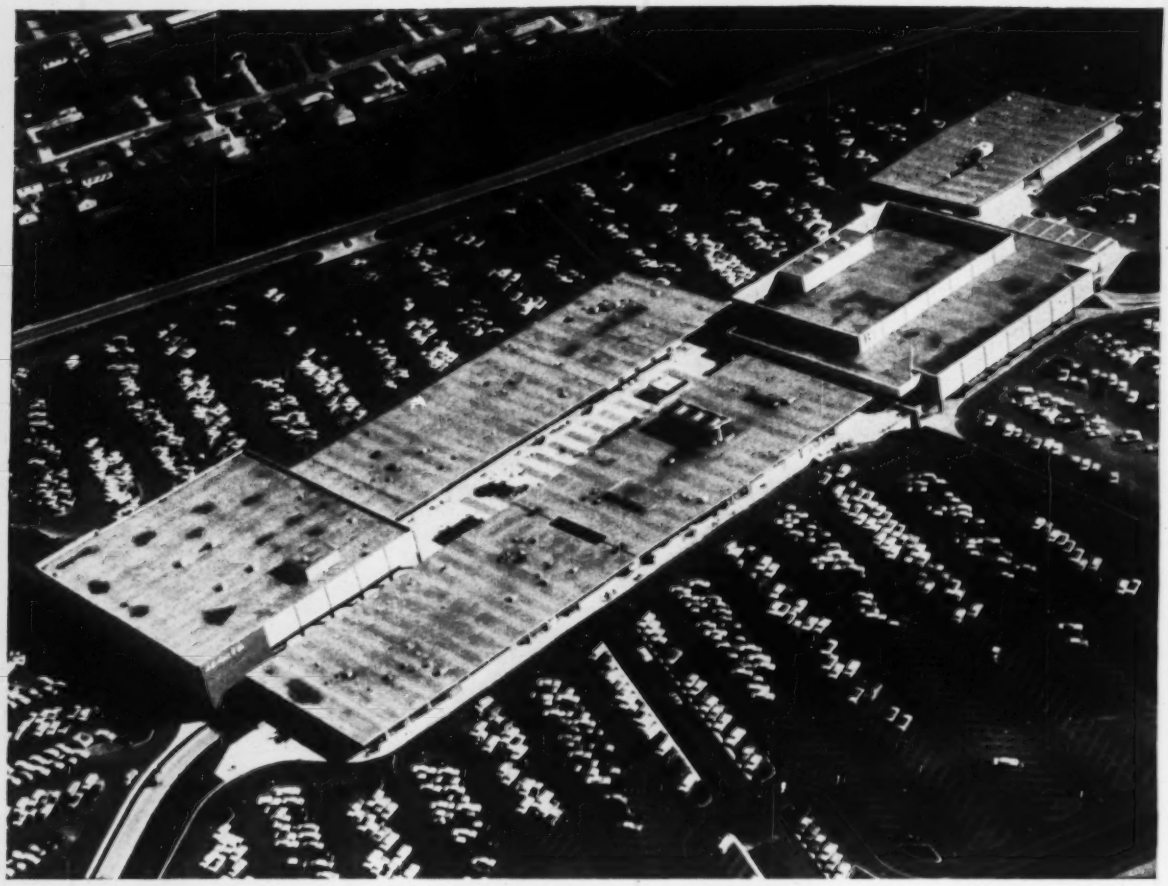
COMPACT. Unit is only 54 inches high, 61 inches wide, and 122 inches long (pneumatic tire unit.)



YEARS OF EXTRA LIFE. Clutch allows you to warm up engine without engaging compressor for easier starts.



DESIGNED FOR HIGH SPEED TOWING. Unit has high speed tires, and a heavy tow bar.



Aerial view of Glendale. General contractor: Glendale Center, Inc. Construction agent: Inland Construction, Inc. Developers: Landau & Heyman, Inc. Planning and design: Victor Gruen Associates.

840 tons of re-bars from Ryerson for Indiana's largest shopping center

The new 55-acre Glendale shopping center in northeast Indianapolis is a milestone in ultramodern design and construction.

Among its unique features is a service tunnel—running the entire length of the center. Thirty feet wide at entrance and exit, it handles all deliveries to and from Glendale's five buildings, and is the nerve center for power lines, sewer system, heating and air conditioning equipment, and telephone distribution lines. The tunnel's 15-inch concrete retaining walls are reinforced by re-bars from Ryerson—as is the center's largest building. Total re-bars from Ryerson: 840 tons.

On big projects like this, or jobs that require only a few tons—Ryerson offers unequaled service: large stocks of all reinforcing steels . . . big-capacity fabricating facilities . . . specialists in detailing and setting plans . . . accurate identification and dependable shipments—exactly as your job requires.

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ENGINEERING NEWS-RECORD

Vol. 163, No. 2 July 9, 1959

Number of copies printed this issue 85,109

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THE CONSTRUCTION WEEK

MERCHANDISING RELIGION—A Methodist church in Louisville will have a swimming pool, tennis courts, snack bar and a 30-ft-high glass cross that will blink alternately red and white at night. The idea is to attract youngsters—better to get them this way than not at all, says the minister. And to make it easier for adult worshippers, an auto ramp leads up to the second floor chapel. Total cost: $135,000.

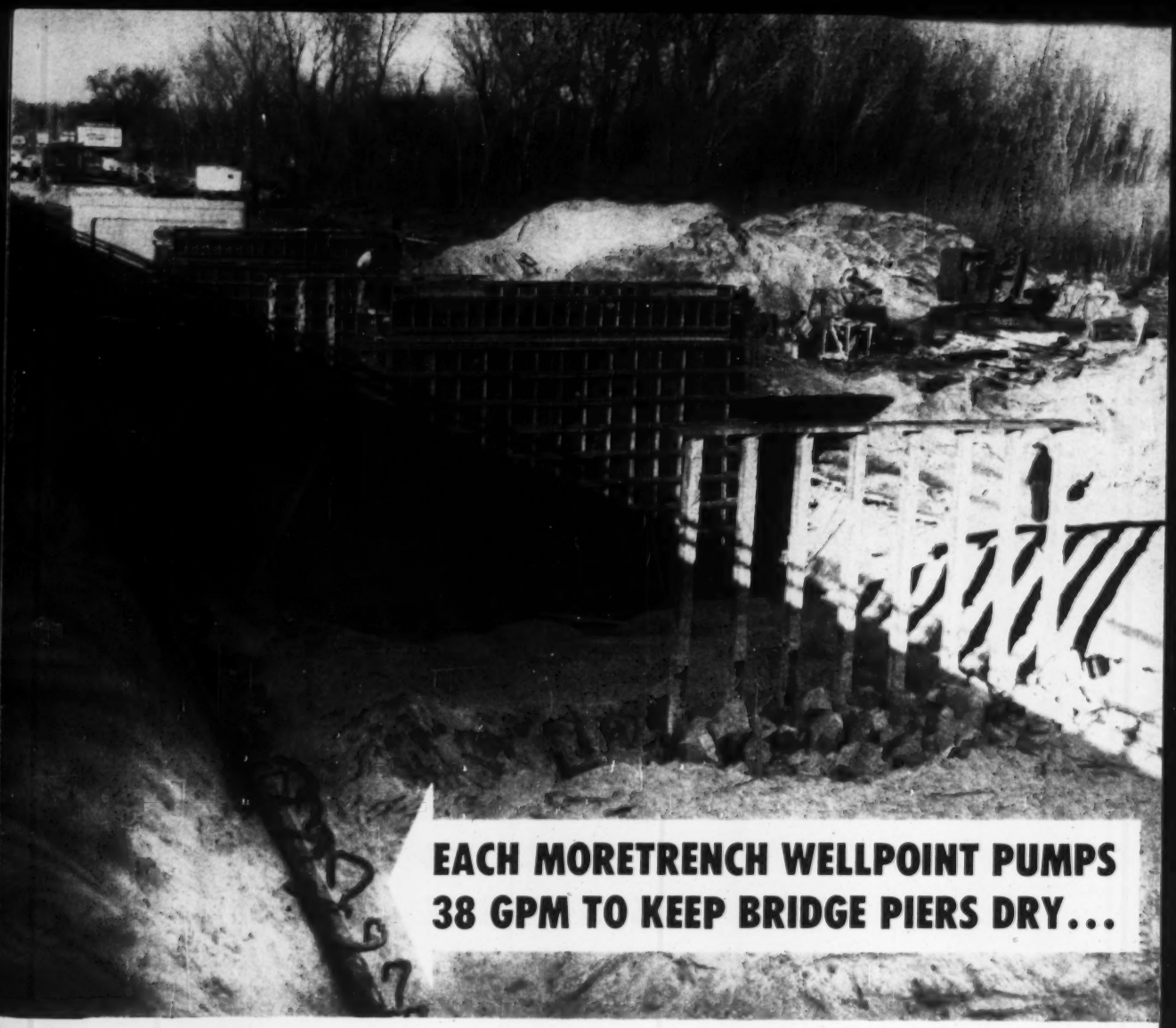
LOCKING THE BARN DOOR—The Houston School Board has voted to increase architects' fees so they can hire structural engineers to inspect school construction. A girl was killed in Houston recently when a brick wall around a school collapsed (ENR June 18, p. 48). A subsequent engineers' report said walls at about 20 other schools needed strengthening.

LEAK IN THE WATER PLAN?—The California Labor Federation is threatening to oppose the state's $1.7-billion water development bond issue to be voted on in November, 1960. The labor organization says the program will benefit "giant landholders." Labor wants amended legislation that would limit any one landowner to irrigation of 160 acres. The proposed water program will carry surplus water from northern California 500 miles to water-short southern California.

ANOTHER WRIGHT CONTROVERSY—Members of Arizona's Board of Regents are using such terms as "Disneyland" and "merry-go-round" to describe the late Frank Lloyd Wright's design for a proposed $6.5-million auditorium and fine arts center at Arizona State University. The board has authorized preliminary planning, but will wait to see final plans before permitting construction to start.

TABLES ARE TURNED—Contractors rejected a three-year labor contract negotiated last week by an association bargaining team. Result: the San Francisco area's first building trades strike of the year. About 8,000 painters, who had already ratified the new 70-cent contract with the Bay Area Painting Contractors Association, walked off their jobs after association members turned down the contract on a referendum vote.

NEW LOOK FOR AN OLD CHESTNUT—Florida politicians and the Corps of Engineers are dusting off a 138-year-old idea for a barge canal across north central Florida from the Atlantic Coast near Jacksonville to the Gulf of Mexico at Yankeetown, about 85 miles north of St. Petersburg. Cost is now estimated at $165 million. The canal was first proposed by Gen. Andrew Jackson in 1821. He said it had military value. But that was before cars, trucks, an Interstate Highway System and pipelines.



EACH MORETRENCH WELLPOINT PUMPS 38 GPM TO KEEP BRIDGE PIERS DRY...

Platte River Bridge, Platte, Nebraska – Contractor: Jensen Construction Co., Des Moines, Iowa

Deep foundations for three bridge piers are kept dry – *at one time* – by MORETRENCH WELLPOINT EQUIPMENT's steady removal of 16' of water from a coarse sand and pea gravel overlying medium to fine sand. Water level in river 959. Subgrade 943.

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WASHINGTON OBSERVER

- **Small contractors are getting their share**
- **Water pollution: What if St. Joe says "no"?**
- **Air pollution: Research money coming**
- **GI Housing loans won't stop**

● **Smaller contractors are getting a fair share of military construction business.** That's the claim of Defense Department witnesses testifying before Congressional appropriations committees.

They also say construction awards are being made predominantly by competitive bidding.

These two trends are good news to Congressmen, who are continually besieged for aid to small business. The general complaint heard on Capitol Hill is that the big military suppliers are getting bigger, and are doing so because contracts are negotiated instead of being offered for bid to all comers. That doesn't appear to be so with construction.

Here are the latest construction figures, covering July 1958-March 1959:

Army Corps of Engineers let 1,853 construction contracts totaling $477.9 million—1,355 of them, worth $266.7 million, went to "small business" (fewer than 500 workers).

Navy Bureau of Yards & Docks awarded 2,104 contracts worth $117 million—2,031 of them, valued at $103 million, went to small contractors.

● **The federal government's effort to clean up the Missouri River may bring the final test:** What happens if a city simply refuses to install modern sewage treatment? Health-Education-Welfare Secretary Arthur S. Flemming admits he doesn't really know.

Sioux City, Iowa was ordered last April to stop polluting the river, and last week Secretary Flemming ordered a public hearing at St. Joseph, Mo. If the voters refuse to approve a bond issue for a new plant—as has already happened once at St Joseph—what can the federal government do? "That's a very interesting question," says Flemming.

● **More funds for research on air pollution are well on the way through Congress.** The Senate-approved bill now before the House Appropriations Committee would step up annual expenditures from $5 million to $7.5 million. But Congress is not likely to give the Administration the authority it wants to hold local hearings and make recommendations. This has been attacked as federal interference in a local problem.

● **Veterans Administration will be making GI housing loans** despite the President's holddown on the $100-million kitty Congress voted recently. Even before Mr. Eisenhower signed the special GI housing bill, there was an existing authority for VA to lend out $150 million during the current fiscal year. The agency expects to make such loans as they have been doing ever since Congress passed the emergency housing law in April, 1958. All the $150 million for fiscal 1959 was earmarked or loaned out; and there are thousands of applications in the backlog carried over into the fiscal year that's just begun.

President Eisenhower wants VA officials to check out the new 5¼% interest rate allowed on VA-insured private mortgages to see whether this won't take care of GI demand. The President figures that the additional $100 million should be kept untapped for as long as possible.

Making a 6" outlet under pressure in a 20" Lock Joint Prestressed Concrete Cylinder Pipe.

Tapping a 1" house connection under pressure in Lock Joint Concrete Pressure Pipe.

TAPPING LOCK JOINT CONCRETE PRESSURE PIPE

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ENGINEERING
NEWS-RECORD

Urban Renewal Stirs Up a Storm

- **In New York City, charges of favoritism and conflict of interest are raging around the slum clearance program.**
- **Despite the outcries, New York's program leads the nation.**
- **Across the country, only 25 projects have been completed. Two big cities haven't even received their first grants.**

Most of the hue and cry over New York City's redevelopment program is being leveled at a familiar target—Robert Moses, who is chairman of the city's Slum Clearance Committee, among other things.

Most of the charges stem from newspaper investigations. They include accusations of favoritism and conflict of interest, mismanagement—and suggestions of dishonesty.

A few Congressmen have called for an investigation.

Here are some of the major charges:

• Thomas J. Shanahan, vice chairman of the Slum Clearance Committee, is also president of a New York City bank that has made loans to a sponsor of a site being redeveloped under Title I of the National Housing Act of 1949.

• A member of the staff of attorney Monroe Goldwater, former campaign manager for New York City Mayor Robert F. Wagner, is owner of record of a site condemned for "slum clearance." The area consists of small houses and gardens.

• Bidders for redevelopment are preselected and auctioning of property is just a formality, not a reality.

• An investor in one redevelopment project, Louis I. Pokrass, was formerly a business associate of racketeer Frank Costello.

• Architect Melvin E. Kessler was a sponsor of the Manhattantown project that was defaulted in 1957 (ENR July 4, 1957, p. 24). Because of the scandals disclosed at the time, Mr. Kessler was to be barred from any future activity in New York City redevelopment. But S. J. Kessler & Sons, architects, of which Mr. Kessler is a partner, held contracts for the planning of 10 Title I projects.

Mayor Wagner concedes that banker Shanahan might have made a "mistake in judgment," but he emphasizes there is no evidence of wrongdoing. However, the Pokrass and Kessler disclosures brought action.

The mayor ordered an investgation by Deputy Mayor Paul T. O'Keefe into the methods of sponsor-selection used by the Slum Clearance Committee. He also renewed the order that Mr. Kessler was to be barred from any further participation in future Title I projects.

Mr. Moses fired back, saying the city's slum clearance program is now a "dead duck."

"Ruinous charges and misstatements" will keep all but union-sponsored housing cooperatives out of the program, he predicted.

Mr. Moses also pointed out that there is no legal means of barring architect Kessler, because the architects and designers of Title I projects are selected by sponsors of redevelopment projects. Neither the federal nor local government has direct control over this selection. However, projects must be approved or disapproved by the city's Board of Estimate, and Mayor Wagner reminded, "I am chairman of the board."

The questions revolving around the "small houses and gardens" site slated for redevelopment brought a stop order from the Urban Renewal Administration in Washington. No more U.S. money will be spent on planning until Mr. Moses clarifies the situation, the government says.

The public auction of land issue is academic, however, because all potential sponsors must first be considered for ability, financial responsibility and experience before property worth several million dollars is turned over to them at sub-market prices. Negotiations are carried out with all hopeful sponsors in almost all the cities before the public auction.

Part of New York's troubles stem from a unique aspect of its operation. New York turns over land, buildings and tenants to the developer. The developer continues to collect rent until relocation is complete. The Department of Real Estate supervises relocation.

Other cities turn over cleared land to the developers after a city agency has carried out relocation.

Federal law does not stipulate which method of property disposition should be used. The procedure is left up to the community. But officials in Washington and in the New York regional office of the URA would be much happier if New York City adopted the method used in the rest of the country (ENR Oct. 3, 1957, p. 104).

But unorthodox or not, New York City has made more progress with its program than other cities. The accomplished, but irascible Mr. Moses gets things done, while ruffling plenty of feathers in the process.

Since the start of the program in 1949, the government has authorized $1.35 billion in capital grants for urban renewal. All but $20 million to $25 million is earmarked. That amount is held in reserve for emergencies.

The amount earmarked covers 646 projects in 386 communities. About 47.5% of the total—$629.4 million—is directed to 121 projects in 16 cities with population of 500,000 or more (see table on p. 22).

Across the nation, only 25 projects have been completed; six of these are in the 16 largest cities. Total disbursements for completed and partially completed projects now stand at $207 million, or only 15.6% of total grant reservations authorized.

Here again, the big 16 cities account for the lion's share. They have received capital grant payments as of March 31 of $104 million. This is just over half of total payments to all communities.

Although the dollar volume and percentage relationship are large with respect to earmarking and grants received, completion figures are much smaller.

The 16 big cities are earmarked for $629.4 million, but the money paid out for completed projects amounts to only

Urban Renewal: Scoreboard for 16 Top Cities

(Cities of 500,000 or more population, May 31, 1959)

	Projects				Funds Reserved				Paid Out (Through 3/31)
	Total	Completed*	Underway	Planned	Completed	Underway	Planned	Total	
Baltimore	10	1	4	5	$1,007,534	$15,098,387	$9,934,451	$26,040,372	$6,075,000
Boston	2	...	2	..	.....	12,596,962	.....	12,596,962	1,777,000
Buffalo	2	...	1	1	.....	9,884,608	2,570,800	12,455,408	.....
Chicago	25	...	18	7	.....	73,325,983	19,211,770	92,437,753	19,584,000
Cincinnati	4	...	1	3	.....	4,607,015	21,852,900	26,459,915	1,895,000
Cleveland	4	...	2	2	.....	6,209,052	8,210,878	14,419,930	3,678,000
Detroit	9	...	4	5	.....	15,000,494	20,925,504	35,925,998	2,764,000
Los Angeles	2	...	..	2	.....	.....	20,699,461	20,699,461	.....
Minneapolis	3	...	2	1	.....	15,721,706	1,685,950	17,407,656	1,586,000
Milwaukee	4	...	2	2	.....	4,565,112	13,294,000	17,859,112	970,000
New York	26	3	12	11	11,954,000	85,917,867	58,236,080	156,107,947	39,818,000
Philadelphia	15	2	9	4	1,112,815	44,133,431	15,096,131	60,342,377	7,145,000
Pittsburgh	4	...	1	3	.....	12,472,767	13,353,321	25,826,088	6,370,000
St. Louis	3	...	3	..	.....	31,286,535	.....	31,286,535	1,033,000
San Francisco	3	...	2	1	.....	9,327,260	5,549,836	14,877,096	1,840,000
Wash., D. C.	5	...	3	2	.....	49,986,908	14,551,111	64,538,019	9,787,000
Total	121	6	66	49	$14,074,349	$390,134,087	$225,172,193	$629,380,629	$104,322,000

* Completed means the URA's "books have been closed." Some projects might be in partial use, with the books still open. Therefore, they would not show up in the "completed" list.

Source: Urban Renewal Administration

$14.1 million, or a scant 2.2% of their reservations. It also represents only 13.5% of total disbursements, which include payouts to acquire both entire sites and portions of sites.

The amounts paid to the 16 cities in relation to the earmarkings of each show some big differences. For example, Buffalo and Los Angeles are earmarked for $12.5 million and $20.7 million, respectively. As of March 31, however, neither city had advanced its program far enough to obtain a capital grant.

And St. Louis, earmarked for $31.3 million, was eligible for a grant of only $1.1 million, or 3.3% of the total amount of capital grants. Next lowest is Milwaukee. It is earmarked for $17.9 million, but has received only $970,000 —5.4% of capital grant eligibility.

Using that yardstick for accomplishment, New York City leads the nation's cities. It is earmarked for $156.1 million and has received $39.8 million (25.2%) in capital grant payments. But close behind is Pittsburgh. Earmarked for $25.8 million, it has taken down 24.6% of that amount—$6.4 million.

For sheer massiveness of plans and size of accomplishment New York City is obviously a leader, a point not fully shown by capital grant payouts in relation to earmarkings.

It has completed the N. Y. Coliseum —a block-square exposition center and 20-story office building in midtown Manhattan—and two apartment complexes.

Other projects are under way and some units within them are occupied. Right now, visible activity is occurring on 12 sites and as of May 31, 11 projects were either on the drawing boards or fast approaching that stage.

New York has placed greatest emphasis on housing—a subject charged with emotion literally from start to finish.

The problems begin when the residents of slum dwellings are forced to move, no matter who takes responsibility for relocation.

Even after an apartment building is completed, there are often critics who say that living accommodations are being provided for the wrong people. For example, one of New York City's major residential projects now under way—Washington Square Village, is a luxury rental unit. Rents start at about $200 a month for a two-and-one-half room living unit. Opponents say that the slum area cleared should have been replaced with housing for moderate income families.

However, so far as the law is concerned, a reuse of land must be considered in the light of economic and financial feasibility. If luxury quarters can be filled, there is no violation of the law.

While some people believe urban renewal is supposed to make low-rent housing available, the law does not define rent levels. The law was set up to clear slum areas, and to provide private developers with enough profit incentive for them to take on the job.

Even the sale of land to developers at a bargain price cannot always guarantee a profit when housing is being provided. High construction costs often prohibit construction of middle-income living units designed to rent at $25 to $50 a room.

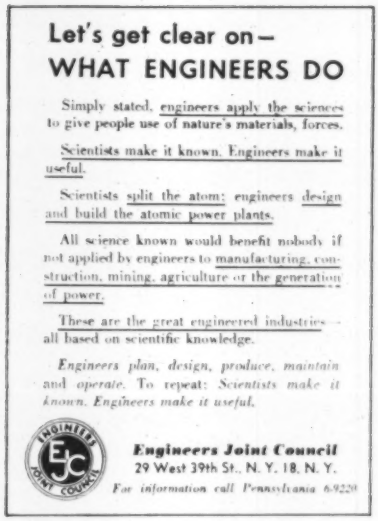
New York City has stepped in to provide such housing by providing tax abatement for cooperative apartment buildings. Under these terms it is possible to provide a supply of housing with monthly maintenance costs of $20 to $50 a room and down payments ranging upward from $600 a room.

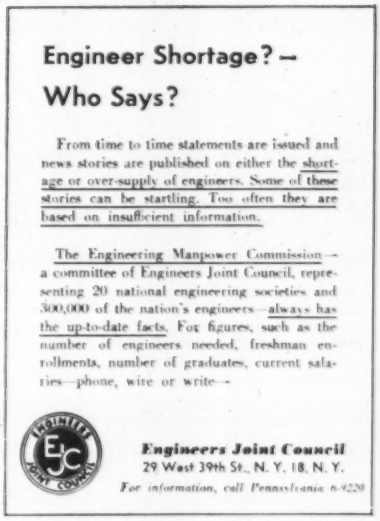
Mr. Moses maintains his committee's method of operation has allowed builders to supply housing for this middle-income group.

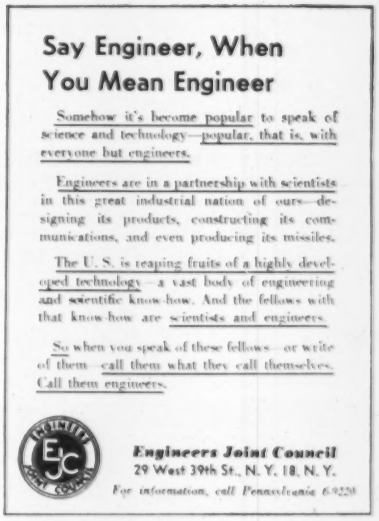
Why New York City turns over land and people to developers is yet to be answered satisfactorily. The practice did result in a major abuse that has been corrected. The sponsors collected the rents, for as long as five years, without making a start on relocation.

Two such cases came to light in 1957: the Manhattantown project and the New York University-Bellevue project. In those cases, the original developers cleared a profit without razing a single building.

The New York office of URA subsequently prevailed on city authorities to tighten contracts with sponsors. Now developers must establish and then carry out relocation schedules on a quarterly basis, under city inspection. Failure to maintain these schedules is considered a default by the developer.


Let's get clear on—
WHAT ENGINEERS DO
Simply stated, engineers apply the sciences to give people use of nature's materials, forces.
Scientists make it known. Engineers make it useful.
Scientists split the atom; engineers design and build the atomic power plants.
All science known would benefit nobody if not applied by engineers to manufacturing, construction, mining, agriculture or the generation of power.
These are the great engineered industries—all based on scientific knowledge.
Engineers plan, design, produce, maintain and operate. To repeat: Scientists make it known. Engineers make it useful.
Engineers Joint Council
29 West 39th St., N. Y. 18, N. Y.
For information call Pennsylvania 6-9220


Engineer Shortage?—
Who Says?
From time to time statements are issued and news stories are published on either the shortage or over-supply of engineers. Some of these stories can be startling. Too often they are based on insufficient information.
The Engineering Manpower Commission—a committee of Engineers Joint Council, representing 20 national engineering societies and 300,000 of the nation's engineers—always has the up-to-date facts. For figures, such as the number of engineers needed, freshman enrollments, number of graduates, current salaries—phone, wire or write—
Engineers Joint Council
29 West 39th St., N. Y. 18, N. Y.
For information, call Pennsylvania 6-9220


Say Engineer, When
You Mean Engineer
Somehow it's become popular to speak of science and technology—popular, that is, with everyone but engineers.
Engineers are in a partnership with scientists in this great industrial nation of ours—designing its products, constructing its communications, and even producing its missiles.
The U. S. is reaping fruits of a highly developed technology—a vast body of engineering and scientific know-how. And the fellows with that know-how are scientists and engineers.
So when you speak of these fellows—or write of them—call them what they call themselves. Call them engineers.
Engineers Joint Council
29 West 39th St., N. Y. 18, N. Y.
For information, call Pennsylvania 6-9220

Ad Campaign 'Explains' Engineers

Engineers Joint Council is setting out to explain what engineers are and what they do.

The method: A series of six advertisements in EDITOR & PUBLISHER magazine. The first three are above.

The target: People who handle mass communication.

Another purpose is to establish EJC as a clearing house for information on engineers and engineering.

In preparing its ad copy, EJC was influenced by the belief that the public has trouble making distinctions between engineers and scientists.

The series of six quarter-page ads began in E&P's June 20 issue and will appear at intervals through this year.

Egypt Okays Aswan High Dam Design

Egyptian authorities have okayed final plans and specifications for Aswan High Dam, including modifications by Russian engineers, according to Cairo newspapers.

Approval could mean a construction start on the huge Nile Valley irrigation project next winter.

Before accepting the design, the Egyptian government engaged a group of engineers from the U.S., Britain, France, Spain and Germany to study the Soviet changes.

The Russians entered the picture late last year when the Soviet government agreed to lend the Nasser government $100 million to start construction of the project. In 1956, the U.S. and the World Bank had withdrawn offers to help finance the project. That precipitated the Suez crisis. Egypt nationalized the Canal; England, France and Israel attacked Egypt. The Aswan financing was left up in the air until the Russians stepped in.

Aswan High Dam will be a 361-ft-high rockfill structure, with a volume of nearly 55 million cu yd, a clay core, upstream impervious blanket and grout cut off. Both upstream and downstream cofferdams will be incorporated in the final dam (ENR Feb. 9, 1956, p. 44).

The two main changes proposed by the Russians are a switch from seven diversion tunnels to a single open channel, and use of granite instead of dune sand for an 83-ft-deep foundation layer.

The Russian plan does not eliminate the tunnels entirely. At about mid-length of the diversion canal, the water flows underground into six tunnels for several hundred feet. The six short tunnels will be equipped with regulating gates and will serve the same ultimate purposes—flood release and irrigation control—as planned for the original.

The Russians say the open-channel plan will save $9 million, speed up construction time by a year, and require lower upstream storage during construction.

The low storage would postpone inundation of a Sudanese area, eventually to be under water, and thus give the Egyptians and Sudanese more time to work out an agreement on compensation of the displaced population.

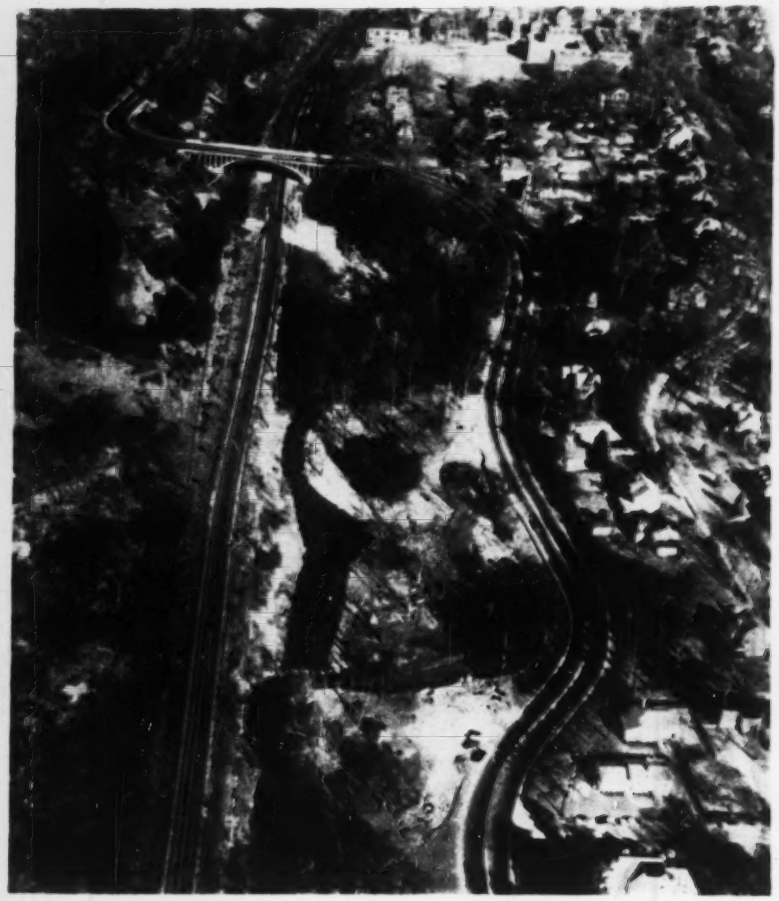
The change to granite fill, the Russians say, will save $3 million because the material is on the site, in contrast to the dune sand, which must be hauled some distance. They also claim that rockfill can stand bombing better.

Agreement still must be reached on several points: (1) composition of the joint Soviet-Egyptian supervision board, which will pick the contractors and supervise their work; (2) the number of Russian technicians and quantity of Soviet equipment to be used by the contractors in first-stage construction; (3) a final work schedule for the first stage.

Meanwhile, the High Dam Authority has received applications from 12 groups of contractors, including some European firms, for participation in the construction of the first stage.

The consultants called in by the Egyptians were I. C. Steele, Lorenz G. Straub and Karl Terzaghi of the U.S.; Andre Coyne of France; Max Pruess of West Germany; four engineers from the Spanish firm of SOGREAH; and three engineers of the firm of Sir Alexander Gibb & Partners of London, headed by senior partner T. A. L. Paton. Their recommendations on the Russian modifications were not made public.

All 12 Western experts were connected with the original investigations, design and hydraulic tests of the dam as consultants to the Egyptian High Dam Authority. The Gibb firm was engaged for the design on the recommendation of a Western consulting group including the U.S., French and German members of the group making the latest study of the Russian changes.



Westchester's curving parkways need expensive rebuilding, so . . .

County Offers Parkways to State

The Westchester County parkways, the forerunners of today's expressways, are expected to be taken over by the State of New York early next year at the request of the county.

When they were built in the '20s and '30s, the four-lane parkways, which run in elaborate curves through the county, were far ahead of their time. But time has since caught up with and passed these routes.

Now they need extensive modernization and repair that will cost from $65 million to $100 million. Westchester is unable to raise it.

Four parkways make up the 75-mile network in southern New York: the Bronx River Parkway, the Hutchinson River Parkway, the Saw Mill River Parkway and the Cross County Parkway. The system cost $60 million to build.

Westchester wants to retain the Bronx River Parkway, because of its historical value and because it offers no serious financial problem. But the county wants the state to assume the maintenance and improvement of the other three parkways, along with their bonded indebtedness of $11.6 million.

Bronx River Parkway, first of the four routes, was built at the turn of the century to connect a series of parks along the Bronx River.

When it was opened in 1922, the Bronx River Parkway was a marvel of highway design. Farsighted planners specified grade separations at most road intersections and a 40-ft roadbed from which four 10-ft lanes were made. The land on each side of the parkway was thoroughly landscaped. The combined width of park and parkway ranged from 200 ft to 1,700 ft. Billboards were not permitted.

New York City paid for three-quarters of the parkway and Westchester paid the rest. The county paid for all of the subsequent three parkways, financing them by bond sales.

The other three parkways in the Westchester network were patterned on the Bronx River Parkway. Hutchinson River Parkway was opened to traffic in 1928; Saw Mill River Parkway, the following year. The comparatively short Cross County Parkway was opened in 1931.

Although still pretty, the parkways are now incapable of handling the heavy volume and high speed of today's traffic. The Hutchinson River Parkway, for instance, had a speed limit of 35 mph when it was opened in 1928.

The Cross County Parkway and the Hutchinson River Parkway are often described as outmoded and unsafe. A one-mile stretch on the Hutchinson River route is popularly known as Death Valley, because of the frequency of accident there. Last year 11 persons died in crashes in two months on the Cross County Parkway.

The problem of maintaining and improving the parkways became apparent more than 20 years ago. A campaign to have them turned over to the state was begun in 1938 and has been kept up with varying intensity ever since.

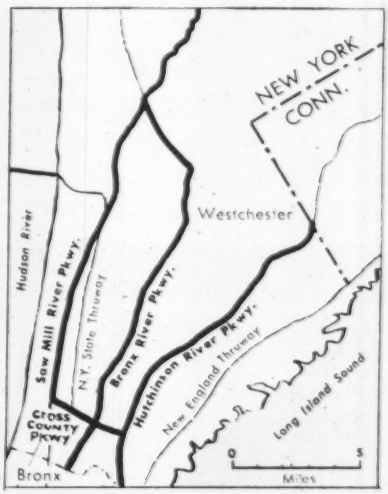
Now the parkways must be widened and straightened and heavy grades must be removed. Many miles of parkway have no dividing strips between opposing lanes, which are needed.

The roads' toll system produces only enough revenue to support borrowing about $25 million—not enough for the reconstruction needed.

County officials maintain that traffic on the parkways is no longer local, that 75% to 80% is from other counties.

The transfer of the three parkways to the state must be approved by the legislature. Bills proposing this agreement are expected to be submitted to the next regular session, which convenes in January. Gov. Nelson A. Rockefeller has set up a special committee to consider means of turning the parkways over to the state.

Westchester wants to keep control over the parks that border the parkways.



The Westchester Parkways.

Senate Backs President's Base Plans

The Pentagon's fuzzy plans for construction of antiaircraft missile bases were clarified last week when the Senate approved the $1.2-billion military construction authorization bill for fiscal 1960.

The vote represents a reluctant endorsement of the Administration's so-called "master plan" on air defense presented to Congress a few weeks back.

This is how the new program shapes up now:

• **Air Force's Bomarc**—Sixteen bases in all will be built in the U.S. Four are now under construction and contracts on four others were recently awarded. Under the previous program, 24 bases were proposed through the fiscal 1960 bill and eight more were planned for next year. The cutback means cancellation of plans for Bomarc sites at Ethan Allen AFB, Vt., and Truax AFB, Wis. Architect-engineering contractors for the two bases had already been picked and construction firms were to be selected last month.

• **Army's Nike-Hercules**—Thirty more installations in all will be built—two each spotted close to 15 bomber bases in the continental U.S. This means the Army is recouping a considerable volume of construction almost shelved in May by the Senate Armed Services Committee. The committee, which ordered the Pentagon's new "master plan" to be drawn up, had revoked fiscal 1959 authority for 50 Nike-Hercules sites at 25 bomber bases. These projects had yet to be contracted out. The fiscal 1960 bill provides no new authority for Hercules installations.

The Senate's $1.2-billion construction authorization bill is essentially in line with the Administration's legislative request. The bill is $41.9 million under the authorization bill approved by the House of Representatives. But the House bill was voted prior to the shakeup in the Pentagon's air defense plans. The final Congressional bill is expected to follow the Senate's version.

Still pending is Congressional action on the military appropriation bill. The House Appropriations Committee is expected to vote on the $1.6-billion measure this week without any major changes in the Administration's budget request.

Explanation for the difference between the $1.2-billion authorization and $1.6-billion appropriation bills for military construction: The money bill covers several projects for which Congress voted authority in previous years.

Under the new Bomarc program, launching sites now under construction at McGuire AFB, N. J.; Suffolk County AFB, N. Y.; Otis AFB, Mass.; and Dow AFB, Me., will be continued. Contracts recently awarded for Langley AFB, Va.; Niagara Falls Municipal Airport, N. Y.; Kinross AFB, Mich., and Duluth Municipal Airport, Minn., will also stand.

Of the remaining Bomarc projects, bids have been requested for Paine AFB, Wash.; Camp Adair, Ore.; Vandenberg AFB, Calif., and Travis AFB, Calif. Additional installations will be built at Minot AFB, N. D.; Glasgow AFB, Mont.; Malmstrom AFB, Mont., and Charleston AFB, S. C. These sites hadn't been announced before.

Construction costs for the Bomarc bases will range from $10 million to $13.5 million each. Two bases will also be built in Canada.

The Pentagon has yet to reveal the bomber bases at which the 30 new Nike-Hercules sites will be built. The average construction cost is $2 million per base.

The Army will also build eight installations in Hawaii and South Korea. Japanese or South Korean contractors will probably build the South Korean bases.

In addition to the air defense installations, the military construction program for the new year includes new facilities for Air Force bombers, Army aviation forces, family housing, overseas bases, antisubmarine naval forces, Army units, Air Force troop-carrier commands, and Air Force intercontinental ballistic missiles.

The new authority covers the last three scheduled Atlas ICBM bases—one at Fairchild AFB, Wash. and two at sites still to be selected. This brings the total Atlas program to nine squadrons. It's still likely, however, that Congress will pressure the Pentagon into expansion of the program.

The fiscal 1960 Titan ICBM program covers five installations—Larson AFB, Wash. and four yet to be selected. The fiscal 1961 program is scheduled to include three more bases, bringing the total Titan program—as now scheduled—to 11 bases.

The latest Atlas and Titan bases will be built underground, with construction costs running from $42 million to $55 million each.

The Air Force has revised its ICBM construction plans. The newer units will be spotted at nine separate launching sites—one launcher to a site—located 15 to 18 miles apart, surrounding the ICBM squadron's headquarters. Earlier units are being built with three launchers each at three launching sites per squadron.

'Cast Iron Only' Rule Is Upset

The Circuit Court in Milwaukee has declared unconstitutional and monopolistic the rule of the Milwaukee and Metropolitan Sewerage commissions that only heavy cast iron pipe could be used for house sewer laterals.

The rule was attacked by five manufacturers of bituminous fiber pipe last spring in a trial before Judge Ronold A. Drechsler (ENR Nov. 20, 1958, p. 26). In his decision, Judge Drechsler declared, "A number of house sewer installations of bituminous fiber pipe has been made and is being used in the city of Milwaukee, in the district and elsewhere in Milwaukee County, without complaint.

"Such pipe, under certain conditions, if properly installed and not abused, meets the requirements for house sewers, at less cost than extra heavy cast iron soil pipe with hot poured lead joints.

It has some qualities which are superior to cast iron soil pipe, such as resistance to corrosion and deterioration under certain soil conditions in the sewerage district area."

He said that the rule was monopolistic because "it does not allow a pipe of material which is equivalent or which is suitable for conditions in which cast iron is not suitable."

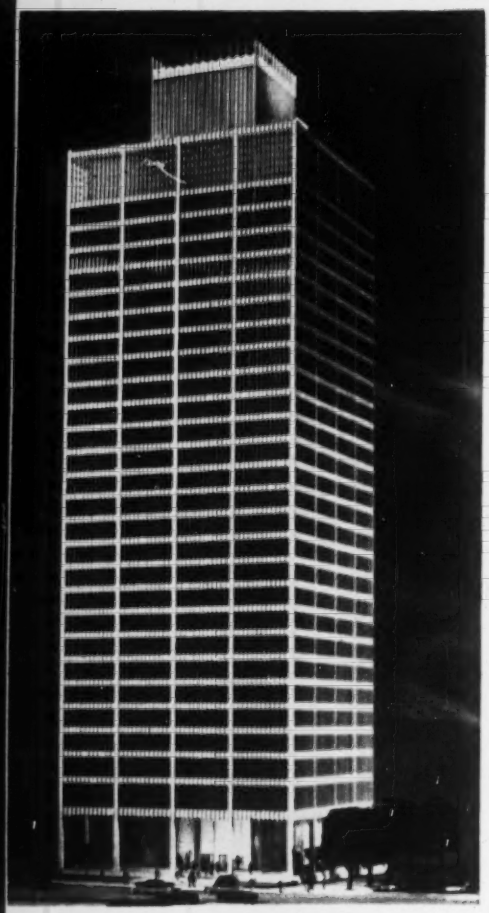
At stake in the action were millions of dollars in sales of sewer pipe made of fiber, clay, concrete, plastic and other materials.

Testimony during the trial indicated use of bituminous pipes for house sewer laterals could result in a saving of $109.50 or more per house over the use of heavy cast iron pipes.

Judge Drechsler pointed out that a governmental body could enact health and sanitation regulations, but "such regulation is void when it would require an inhabitant to connect a certain way with the public sanitary system even though it could not function properly." He said both sewerage commissions had exceeded their power.

The bituminous pipe manufacturers challenging the rule were the McGraw-Edison Co., Chicago; Brown Co., Boston; Orangeburg Manufacturing Co., New York; Kvova Fiber Pipe Co., Ironton, Ohio; and the Tallman Conduit Co., Louisiana, Mo.

A temporary injunction blocked the sewerage commissions from putting the rule into effect November 1, as scheduled.



Skyscraper's Outlook: Six-Sided Windows

A 430-ft-high skyscraper to rise in Detroit's Civic Center by the end of 1962 will feature 9-ft-high hexagonal windows and precast marble-chip wall panels.

The slim windows, 12 to a section between main building mullions, will have peaked tops and matching bottoms to form the six-sided shapes. The $20-million structure will be Michigan Consolidated Gas Co.'s new headquarters.

The steel-framed building will contain 24 office floors plus two mechanical levels at the roof and a glass-enclosed, 30-ft-high lobby at ground level. There will be 450,000 sq ft of floor area in the structure.

Minoru Yamasaki of Birmingham, Mich., and the firm of Smith, Hinchman, Grylls, Associated Architects and Engineers, are the designers.

"We wanted to create a building with grace, dignity and serenity that draws people to it rather than trying to impress and awe them with its massiveness," says Mr. Yamasaki.

Structurally, the building will consist of "waffle" concrete floors on a steel frame.

Compromise Near on Road Funds

A compromise between Congress and the Administration over how to get more money for the Highway Trust Fund appears to be in the works.

Reports are that an understanding has been reached by Secretary of the Treasury Robert Anderson and Rep. Wilbur Mills (D., Ark.), chairman of House Ways and Means Committee.

According to the plan, Congress would boost motor fuels taxes by about one cent per gallon for a one-year period, then earmark—effective next July 1—some of the highway excise taxes that are not going into the Trust Fund.

Congress has been adamant against increasing the gas tax since last fall, when the Administration first hinted that it would request such a measure. Indications now are that Democratic leaders may back down a bit.

Although a compromise would sidestep a dangerous deadlock between Congress and the Administration, it would not be the end of the issue.

Federal Highway Administrator Bertram D. Tallamy has told Congress it will take some $4.5-billion additional revenue between fiscal 1960 and 1964 to keep the road program running at full blast. This would mean that Congress must raise around $900 million beyond the $2 billion current taxes are pumping into the Trust Fund.

Hole Through in 44-Mile Tunnel

New York City's West Delaware water supply project passed a milestone last week when tunnelers in the 44-mile West Delaware Tunnel holed through again.

Five more miles of blasting—one holing through tentatively scheduled for this September and another for next January—will complete the driving of the tunnel. Roughly half the length has been concreted.

The 13½-ft-dia tunnel is part of the $180-million third and final stage of the New York City Board of Water Supply's Delaware water system. The tunnel will carry water by gravity flow from Cannonsville Reservoir, yet to be constructed, to existing Rondout Reservoir. From there the water will flow to the city through the existing 85-mile Delaware Aqueduct.

Tunnel contractors on the project are still well satisfied with a new hard-rock blasting method they developed on this job (ENR June 26, 1958, p. 28). The "burncut" method involves drilling an 8-in.-dia. hole at the center of the drill pattern before blasting.

Flyrock reduction is the big advantage of the burncut method, the contractor says. The muck comes down in a fairly clean pile at the face and the muckers can move right in without having to clear a long path.

The only contractor still tunneling on the project is West Delaware Tunnel Constructors, a joint venture of Johnson, Drake & Piper, Inc., Winston Bros. Co., Tecon Corp., and Conduit & Foundation Corp. A second joint venture contract, held by MacLean-Grove Co. and George M. Brewster & Son, is in final stages.

The next big contract in the Delaware third stage will be for construction of Cannonsville Dam. Stream control work for this part of the project is now under way by E. J. Albrecht Co. of Chicago, under a $2.1-million contract. The Board of Water Supply expects to let a contract next year for the $20-million main embankment, spillway and release-water works, according to Stanley Dore, chief engineer of the BWS (see p. 64 for more on Mr. Dore).

When completed in 1965, the West Delaware third stage will add 360 million gallons a day to the city.

Senate Readies TVA Bond Bill

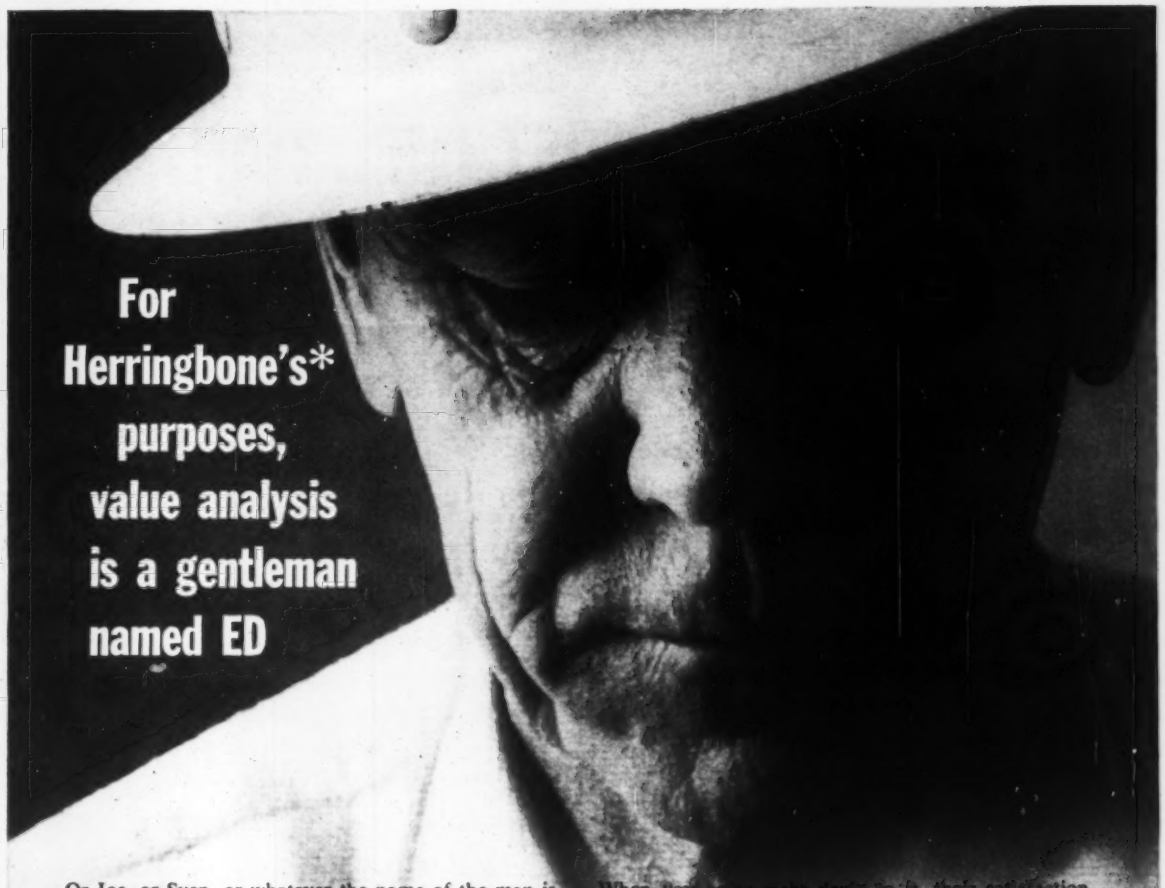
The Tennessee Valley Authority moved a step closer to financial independence from Congress last week when the Senate Public Works Committee unanimously approved a bond financing bill for TVA.

But one feature of the bill—broad expansion of the territory that TVA may service—is certain to prove objectionable to both the House and the President.

The bill (HR 3460) is expected to win easy Senate approval. A joint House-Senate conference will then have to iron out the differences between the Senate measure and that passed by the House in May (ENR May 14, p. 190).

Both bills would allow TVA to issue its own revenue bonds up to a maximum of $750 million outstanding at any one time.

The bill passed by the Senate would allow TVA to extend service boundaries set in 1957. It could: (1) serve 11 more towns in Tennessee, Kentucky and Georgia; and (2) serve new territory without Congressional approval, if no town over 10,000 is included and if the new area is less than 2,000 sq mi or 2½% of TVA's "primary service area" on July 1, 1957, whichever is smaller.



For Herringbone's* purposes, value analysis is a gentleman named ED

Or Joe, or Sven, or whatever the name of the man is in your organization whose opinion on wire rope you most respect. You can take all the value analysis forms ever made and fill them out and get some pretty promising answers. The straightest and clearest answer you'll ever get is from the head gentleman who *works* with the rope; the same man who comes back to you and tells you that the rope he works with *doesn't work*.

We take this stand because the new Roebling Herringbone is championed by men who work with it—the first to feel the impact of a wire rope's success or failure—and the first to tell you about either.

Roebling Herringbone—the two-ropes-in-one rope—is doing things that construction operators find hard to believe—but love to admit. It has prompted a series of some of the nicest testimonials you ever saw.

When you come right down to it, their satisfaction is twofold; after all they are working with both a Lang lay and regular lay rope in one. So they are getting the best that both types of rope construction have to give ... and that's plenty.

If you want to write us and get some pure, unadulterated field reactions, opinions from men who count, just drop a line to Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey. With these, we'll take the liberty of sending you the complete information on the rope that makes value analysis a sure thing by the mere specifying... Roebling Herringbone.

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Two pairs of Lang lay strands provide greater flexibility.

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You hear a lot of arguments about which kind of actuation is best! But unless the brake itself has the inherent capacity to absorb energy and stop without fade, actuation is a lever without a fulcrum.

B.F.Goodrich Hi-Torque Brakes, with exclusive full circle stopping power, have twice the capability of ordinary two-shoe brakes — stop twice as fast under actual operating conditions. More uniform lining pressure keeps brake drum heat to a minimum—reduces the chance of fade on those long, steep grades. And Hi-Torque Brakes perform equally well whether the actuation is air or direct hydraulic. Both systems are available only with B.F.Goodrich Hi-Torque Brakes.

Specify the one brake designed with reserve power to give you faster cycle times, greater safety. B.F.Goodrich Hi-Torque Brakes are available in sizes from 17¼" x 4" to 26" x 7". They need no lubrication, adjust themselves automatically. Contact your equipment supplier or B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Dept. EN-79, Troy, Ohio.

B.F.Goodrich ***Hi-Torque brakes***

Architecture Helps Speed Justice

"Back room" judicial techniques were a major consideration in the design of a new federal building in Oklahoma City. If the idea spreads, it could have a relaxing effect on both courthouse architecture and courtroom procedure.

The Federal District Court of western Oklahoma is a rarity—it manages to keep its docket current. Its efficient handling of cases is largely due to extensive use of pre-trial conferences by the judges. Result: Many cases are settled out of the courtroom; those that do come to court are generally tried quickly.

The success of this procedure prompted renovation of old ideas for the $4½-million building.

Until now one deterrent to the pre-trial conference has been the aura of formality that both sides of a case feel in a courtroom, even during an informal meeting with the judge.

Courtrooms in the new federal building are designed to lighten the formal atmosphere. The structure will have large pre-trial conference rooms adjoining the offices of each of the four district judges—a new thing for federal courts. The rooms will be about 30x70 ft and will contain easy chairs.

Gone are the traditional formal columns. The new look will be dignified, but contemporary, explains the architect, Dow Gumerson, of Oklahoma City.

District courtrooms will have 2,250 sq ft of floor space. A large courtroom will contain 3,400 sq ft. The rest of the five-story building will be occupied by various government agencies.

Movable partitions throughout the building provide maximum flexibility for potential changes in office space requirements. Electrical and mechanical design is similarly coordinated.

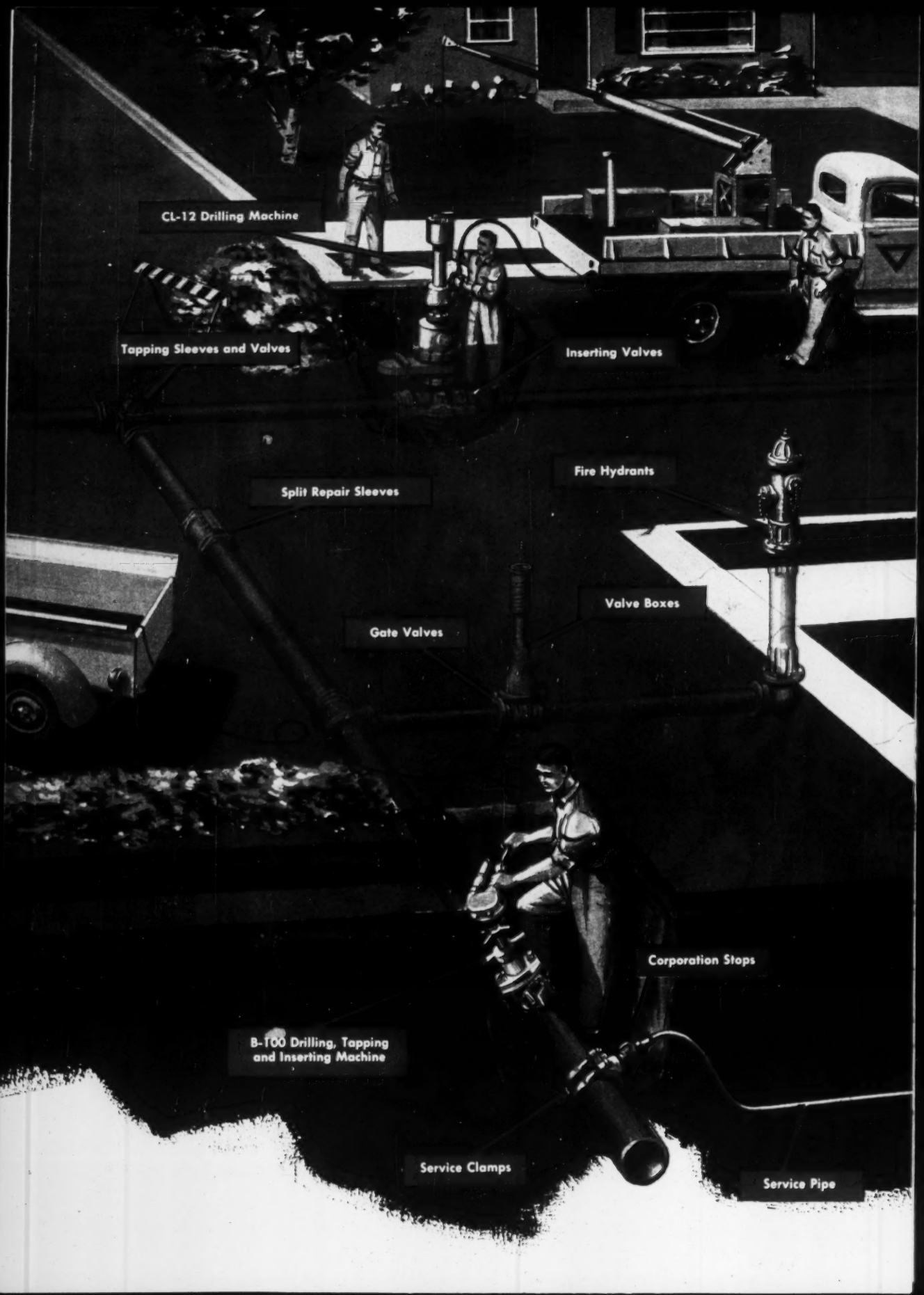
The structure is of reinforced concrete throughout, except for long-span steel trusses that provide large spans over the five federal courtrooms. Construction will start this month for completion by 1961.

Benham Engineering Co., Oklahoma City, is the engineer. J. W. Bateson Co., Dallas, general contractor, was the low bidder with a bid of $4,483,300.

A Place to Meet in Las Vegas

This newly completed $6-million center now enables Las Vegas to handle major conventions (ENR Oct. 16, 1958, p. 44).

The building features a 7,500-seat assembly hall topped by a 312-ft-dia, steel-framed, aluminum-clad dome. The roof overhangs its supports to give the structure a mushroom-like appearance. Adrian Wilson & Associates, Los Angeles, was the architect; Brandow & Johnston, Los Angeles, was structural engineer; and Lembke Construction Co., Las Vegas was general contractor.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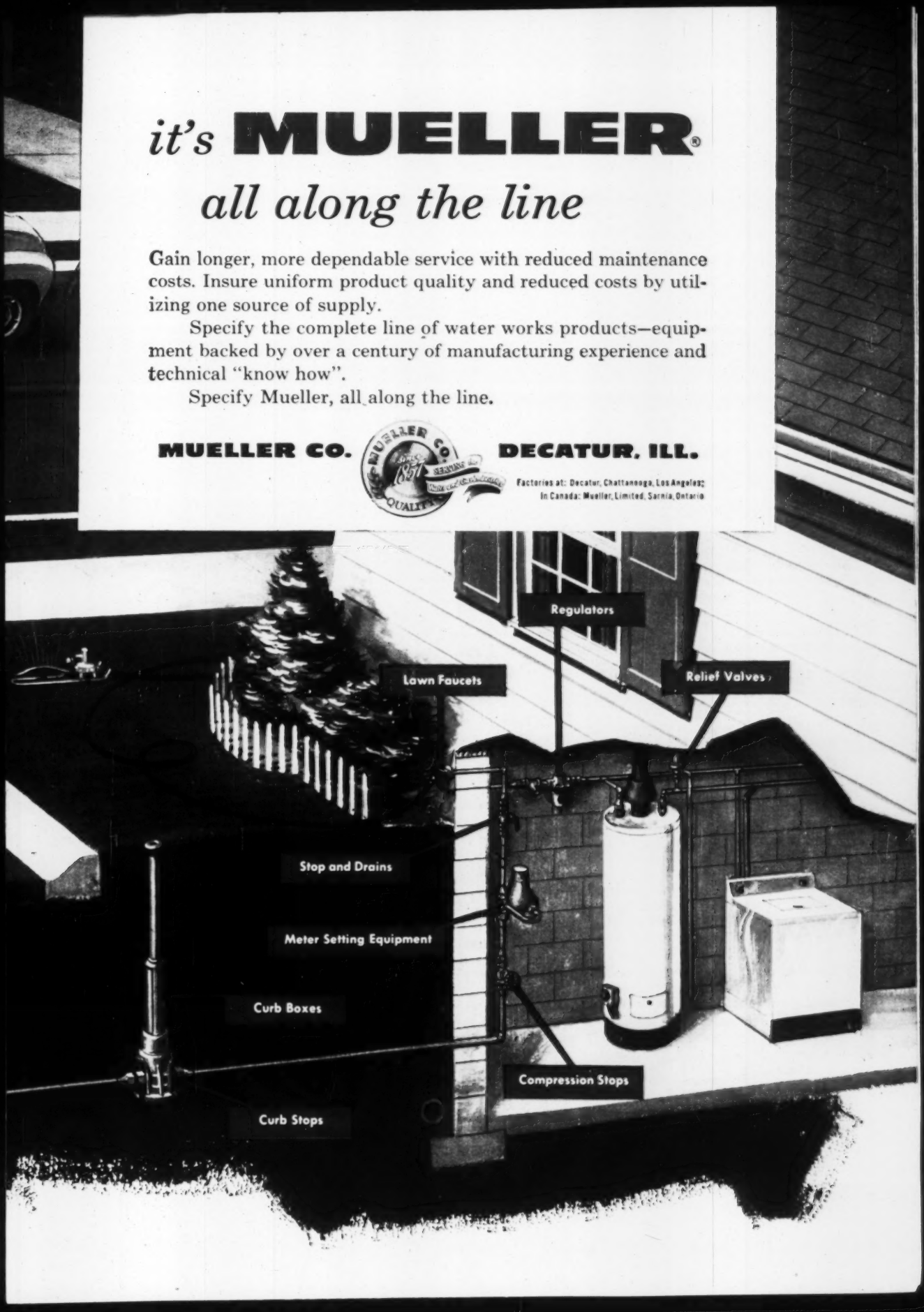
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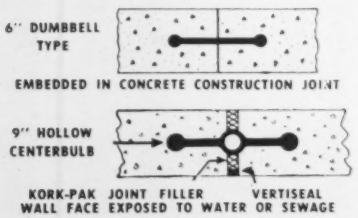
How to Choose Waterstop for optimum performance in concrete joints

Basic Design And Resilience Most Important Factors

The principal function of waterstop is to keep concrete joints watertight where hydrostatic water pressure is present. To be effective, and to perform its function under widely varying conditions, the waterstop must:

1. **Be designed in such a way that it will maintain a "pressure seal" when the joint is opened up or compressed, or when hydrostatic pressure is exerted against it.**
2. **Be made of a material that is inherently stable and resilient...that will retain its resiliency and strength under wide ranges of temperature.**

There is general agreement by many governmental and private specifying authorities, after years of testing and actual installation, that the dumbbell design of waterstop (below) is mechanically superior to any which has been developed to date. The design provides a self-sealing action, because as the concrete contracts and the joint opens up, the outer edges of the dumbbell bulbs become more tightly engaged with the concrete, insuring a tighter seal as the tension increases, due to movement either in the joint or increasing water pressure on one side of the joint. In effect, the greater the longitudinal pull or pressure on one side, the more tightly the dumbbell ends are pulled and squeezed against the concrete. The simpler dumbbell design of the rubber waterstop allows full strength and contact with the concrete surrounding the waterstop. The larger design also provides for maximum strength to resist higher pressures on the web of the waterstop across the joint opening.



Rubber and vinyl are the most commonly used waterstop materials. For the majority of applications, rubber is the most satisfactory material. Being a thermosetting material, rubber is more resilient and "live"...will maintain a constant pull against the retaining edges (bulbs) as the joint opens up or water pressure increases. Vinyl is a thermoplastic compound and tends to take a "set" after it has been stretched, will float in the joint cavity, and have less resistance to the passage of water. When higher temperatures are present, such as in oil storage tanks, where oil is kept at temperatures around 150°F., the vinyl material, unless specifications are rigidly written, will soften and lose strength, causing a failure of the waterstop.

Field Splicing of Dumbbell Type

Servicised Products Corporation has developed a new Union which provides a simple method of joining the ends of dumbbell waterstops, making it just as fast and easy to field splice rubber and neoprene waterstop as the joining of the polyvinylchloride types.

The Union is made in the same cross-section, and from the same material as the waterstop. It is hollow, except for a solid web at the center. After adhesive is applied to the waterstop ends, they are inserted in the Union and pushed against the centering web. The splice is then clamped together until the adhesive has set. This completes the splice.

Dumbbell type rubber and neoprene waterstop are fully described in a special Waterstop Circular available from Servicised Products Corporation upon request. The Union and an interesting new development, Split Type, are also illustrated and described in the circular. Write for it today.

SERVICISED PRODUCTS CORPORATION
6051 W. 65th Street, Chicago 38, Illinois

Around the World . . .

• **Rocket service**—Army Engineers will build a 305-ft-high tower that will move along rails at about 40 ft per minute. The tower will service rockets at Cape Canaveral.

• **Equipment moves fast**—International Harvester Co. reports sales of its construction equipment and parts topped $69 million in the fiscal half year ending April 30. That's an 11.4% gain over the $58-million sales in the same period of 1958.

• **Another lake port job**—Ocean-River Terminals, Inc. plans to build a $10-million general cargo facility for ships and barges near Calumet Harbor, Chicago's main Lake Michigan port. The terminal will be on the Calumet River, on a 25-acre site half a mile east of the harbor entrance. The terminal's 2,000 sq ft of dock space will allow three ocean or lake ships to unload simultaneously.

• **Air Museum takes off**—The General Services Administration has chosen Harbeson, Hough, Livingston & Larson of Philadelphia as architects to do preliminary design work for the National Air Museum of the Smithsonian Institution in Washington, D. C.

• **Pipeline construction next**—Southern Natural Gas Co., Birmingham, received approval for gas lines and compressor stations having an estimated construction cost of $55 million. Facilities would extend service in Mississippi, Georgia, Alabama, Florida and South Carolina.

• **Nothing like experience**—Canada has already learned enough from its still uncompleted nuclear power demonstrator plant at Chalk River to start on bigger things. Final design planning is beginning on a $60-million, 200,000-kw version of the 20,000-kw demonstrator. The new plant will be the biggest nuclear power plant on this side of the Atlantic.

• **Thinking big**—Seattle voters may act on a $30.5-million bond issue next spring as part of a $290-million, six-year public works program. Bonds would pay for expressway extension, general traffic improvement and a tube under Lake Washington Canal.

• **Auditorium go-ahead**—Voters approved a $2.5-million bond issue for a Jacksonville, Fla., public auditorium. Construction will get under way early next year.

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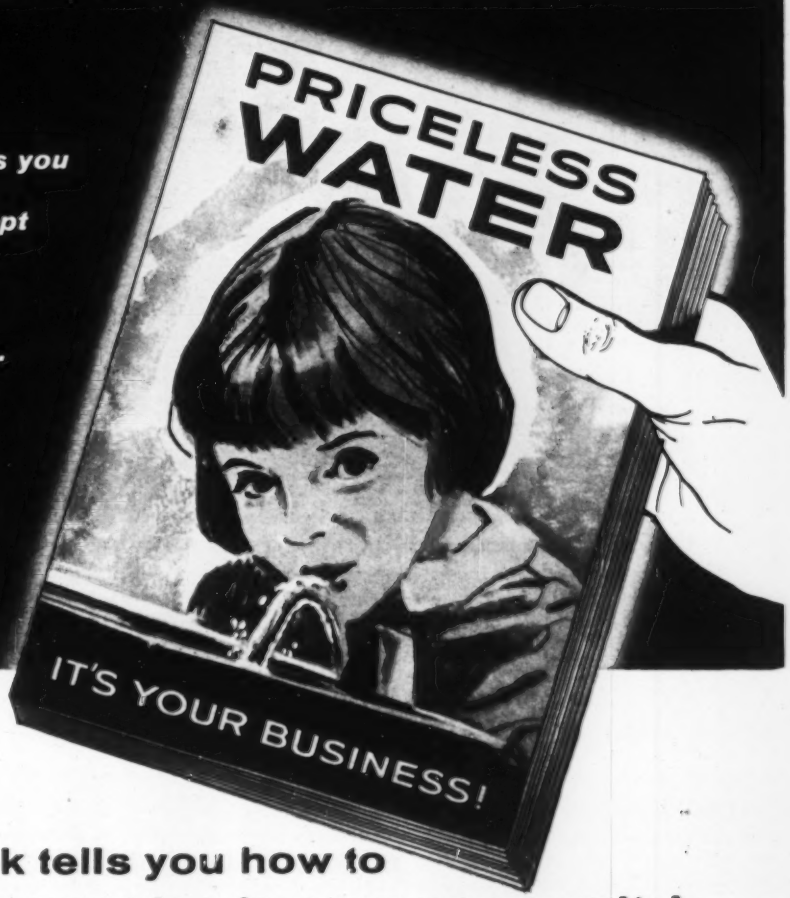

NEW!

84-page book tells you how to get better water service for your community!

Gives unique step-by-step method for water service evaluation and trouble-spotting.

Uses case histories to show how improved water service can benefit your community.

Tells how to make your community want—and approve—water system improvements.

"PRICELESS WATER . . . it's your business" is written expressly for water utility managers, engineers, public officials—all those business and community leaders who are alert to the basic contribution good water makes to the life and economic well-being of a community.

The result of months of study, planning and research—"PRICELESS WATER" is edited in four sections:

Section One, **"How good water service benefits your community,"** gives you needed "ammunition" to convince the most skeptical of the many advantages of good water service. It shows how improved water service affects property values and insurance rates. How an efficient water system will attract business. How a poor system turns it away! This section tells how entire communities have benefited by water improvements.

Section Two, **"How to evaluate your water system,"** is edited for water and town planning officials. It is a new, step-by-step method for water service evaluation. It shows how you can quickly and easily evaluate the efficiency of everything from community water supply, treatment and distribution to metering, staff facilities and operations.

Section Three, **"How to turn evaluation into improved water service,"** tells when a preliminary engineering survey is needed. When and how to retain a consulting engineer. How to use his report as a springboard for action. Fiscal agents, and when and how to use them. Also contains a helpful explanation of various financing methods.

Section Four, **"Arousing the public to action,"** is an easy-to-follow, success-proven handbook on public relations. It tells how a soundly conceived PR program can sell your community on water service.

In short, "PRICELESS WATER" is the hard-hitting tool you need to get your community the improved water service it needs. Send the coupon for your free copy, now!

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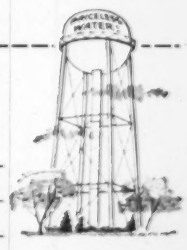


Pumping the sand:

From hopper car and hydrant near filter plant . . .

sand and water feed into eductor.

Hauling the gravel:

Bagged at siding, gravel goes by front-end loader to . . .

plant loading dock, where bags are

How Chicago Plans to Rebuild

Removing, regrading and replacing about 16,000 cu yd of sand and gravel in 80 rapid-filters is a major job facing Chicago's Water Department during the next few years. With the help of experiments conducted at the 12-year-old South District Filtration Plant during the past 18 months, department personnel have solved most of the problems involved in the procedure of removing and rebuilding the filters.

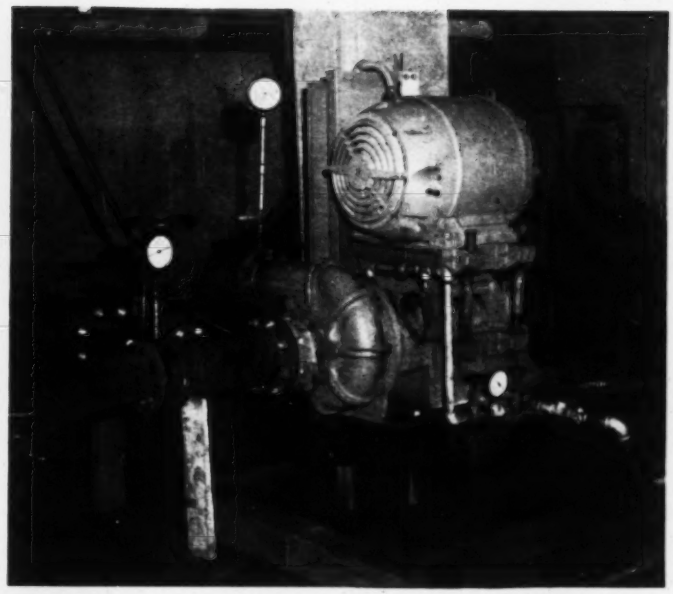
Both the experimental work and the actual rebuilding of the filters is under the supervision of John R. Baylis, Engineer of Water Purification.

One filter has been almost completely rebuilt. A second filter, incorporating a new design of sand and gravel (see sketch), has just been placed in service. A third may be rebuilt this winter.

No schedule has been set for rebuilding the other filters in the 320-mgd filtration plant. They will be rebuilt over the next few years.

It is anticipated that these filters operate efficiently for about 15 years on the average before the sand and gravel must be removed, regraded and replaced. Since they have been in operation 12 years, an increasing number will probably have to be rebuilt during the next five years.

Decision to rebuild a filter is based chiefly on the amount and rapidity of sand loss during backwashing, or by leakage through the bed. It is also based



Booster pump keeps the sand and water moving to . . .

discharge point in the filters.

placed on . . .

hand trucks for final haul to the filters.

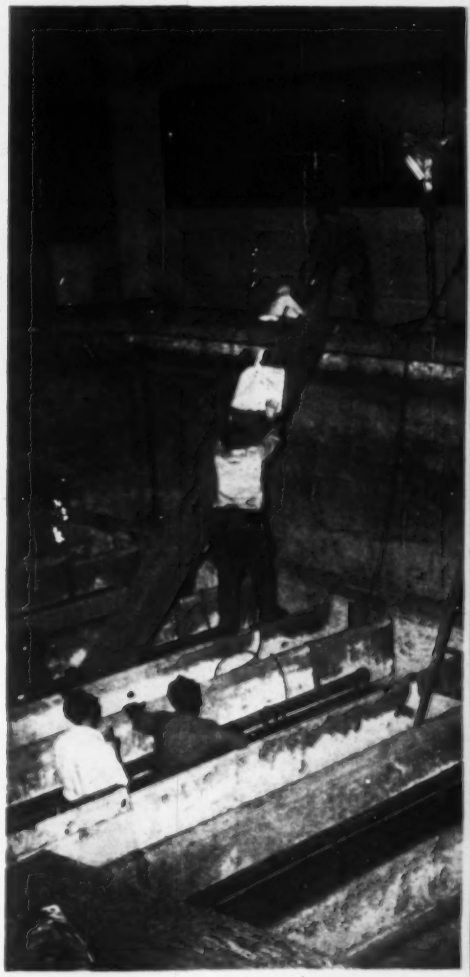
Rapid Sand Filters

on the amount of "mounding" of filter material during backwashing and the degree to which the top layer of sand becomes intermingled with the underlying layers of gravel.

• **Hydraulic operation**—Hydraulic methods are used as much as practical in removing sand and gravel from a filter, rescreening it, returning it to the filter.

The first full scale experiment was performed on a filter during the winter of 1957-58. A 4-in. centrifugal pump sucked up the top layer of sand and the gravel up to ¾ in. The pump transported the material in water under pressure through a 4-in. rubber pipe to a sand and aggregate screening machine in one corner of the filter building.

Larger gravel making up the two bottom layers was not removed from the filter since it clogged the pump impeller. After being screened and separated from the gravel, part of the sand



Last leg is drop down a chute.

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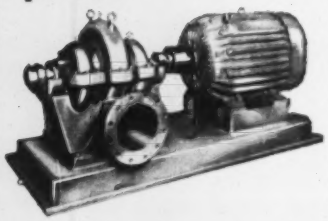

Weinman Double Suction Split Case pumps assure dollar-saving efficiency in a wide range of operating conditions. The enclosed double-suction impeller is cast from one piece of hard bronze, cast iron or other alloy you specify. External surfaces are all machined and finished, interior surfaces are hand finished. You can't make a better choice for general duty water service.

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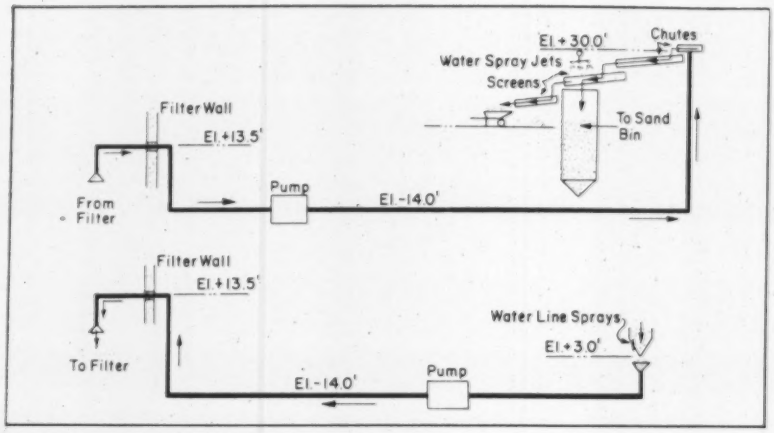

SAND FOR REGRADING is pumped from filter to vibrating screens and back.

was pumped back into the filter, and the remainder placed by a high pressure eductor. The gravel that had been removed, however, was replaced by hand, except for the two finer sizes, which were educted back to the filter through the 4-in. rubber pipeline.

From the experience gained in removing gravel in this test, it was apparent that a pump with larger openings was needed. A pump with an 8-in. suction and 6-in. discharge was purchased.

In rebuilding the filters, very little additional gravel will be needed except that required by new filter design. But considerable new sand will be needed to replace that lost through backwashing. During 1958 the 80 filters were backwashed a total of 38,434 times—an average of 14 backwashes per filter per day. April was the heaviest month, with 5,380 backwashes.

• **Pumping sand**—In May of this year a full-scale test was performed on pumping sand 1,100 ft from a railroad hopper car to a filter that had lost considerable sand. This represents about the longest distance sand will need to be moved.

The sand arrived in a four-gate hopper-dump coal car and was spotted on a spur about 350 ft from the filter building. Four-inch rubber pipe in 25-ft sections was laid from near the railroad track to the inside of the filter.

The railroad track is 12 ft above the average level of Lake Michigan. The top of the washwater troughs on the filter is 9.5 ft above lake level. Inside the building, the pipe was laid on a floor 14 ft below lake level.

Previous sand-unloading experience had shown a sand eductor, or ejector, to be the best means of moving sand mixed with water from a car into the filter building. Inside the building, the smaller sand pump was connected into the line to boost the sand on to the filter.

A 3-in. eductor and hopper were installed in a pit dug in the ground at the end of the railroad cross ties. The top of the hopper was level with the top of the ties. A nearby fire hydrant furnished water under 40 psi to the eductor through a 3-in. hose. A 100-ft length of 3-in. rubber-lined hose was connected between the eductor and the 4-in. rubber pipe.

The sand was fed into the hopper and successfully pumped the 1,100 ft to the filter. This proved that sand could be pumped from the car to any filter in the building by hydraulic method.

As the sand was pumped into the filter it formed small mounds at the end of the 4-in. rubber pipe. From time to time the backwash was turned on for a few minutes to distribute the sand over the bed. The carload of sand was unloaded in about 15 hours with the 3-in. eductor. The job could have been done in an estimated 8 hours with the 4-in. eductor.

• **New filter design**—The second filter to be rebuilt was completed and placed back in service last month. This involved not only removal, rescreening and replacing of existing sand and gravel, but also a new filter-design requiring new gradations of gravel, shipped in by rail.

The new design calls for three gradations of gravel placed in six layers, a 4-in. layer of ¾-in. to 1½-in. material, and 25 in. of sand. Biggest aggregate in the new design is 2 in., compared with 3½ in. maximum in the original filters. The existing filters are made up of six sizes of aggregate, plus a top 24.5-in. layer of sand.

• **Gravel handling**—Considerable hand labor was involved in moving the new gravel from the railroad car to the filter. It was bagged in the car in 100-lb bags and transported 350 ft to the loading dock by a rubber-tired tractor mounting a ¾-yd front-end bucket.

The bags of stone were transported

. . . to handle the complexities of water system construction.

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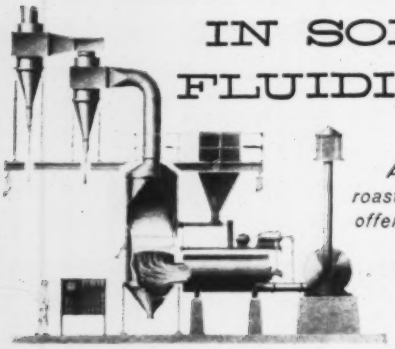

A versatile drying, roasting and calcining technique offers opportunities in chemical processing. Here's a report on developments.

Since Dorr-Oliver first introduced the fluidization technique for non-catalytic applications more than ten years ago, our engineers have been constantly investigating its wide potentialities. From such well established operations as the roasting of sulphide ores, SO_2 production for acid manufacture, drying of fine coal and drying and sizing of lime stone, development is now extending into many fields of chemical processing.

The advantages of FluoSolids®, Dorr-Oliver's system for fluidized bed techniques, are its essential simplicity, its compactness, its low operating and maintenance costs, its ability to take wide feed variations and its inherent adaptability to precise temperature control with simple instrumentation. It has proved particularly effective in drying wet, sticky or otherwise difficult-to-handle materials. In some drying operations, the added benefit of classification by particle size is possible.

At D-O's research and development center, Westport, Connecticut, hundreds of test runs covering many possible new applications have been completed. Typical of these are the drying of heat sensitive polymers, hydrochloric acid and sodium sulphate production by the Hargreaves Process, drying of sodium chlorate crystals and potassium silicon fluorides, drying of chemical precipitates, roasting of furfural residues, and low temperature calcination of phosphates. Opportunities for still further development are far from exhausted.

To sum it up: if you want a continuous, high capacity method of drying or heat treating materials . . . if precise and completely uniform temperatures are needed to prevent, induce, or control chemical or physical action . . . if intimate contact of gases with solids is a necessary part of your processing . . . maybe the Dorrco FluoSolids System is your answer.

Chances are that our engineers have already been working on just such a problem as yours. If they haven't, the information and experience now available should at least provide a good starting point for investigation and evaluation. An inquiry costs nothing — and it may open up mutually rewarding opportunities. Dorr-Oliver Incorporated, Stamford, Connecticut.

Dorr-Oliver offers a wide range of equipment, methods and complete systems for the processing industries. Operations include:

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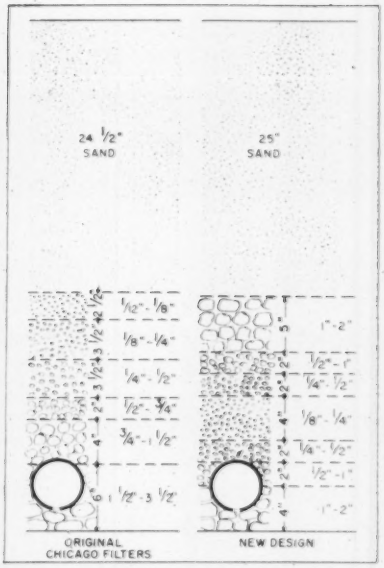

FILTER REDESIGN puts fine gravel between layers of increasing coarseness.

on small push carts from loading dock to the side of the filter. They were slid down inclined planks to the bottom and spread by hand rakes.

• **Hydraulic suction**—The hydraulic suction system was used to transport sand and gravel up to 1½-in. size from the filter to vibrating screens in the sand and gravel room. Larger gravel was removed by hand shovel.

A 6-in. pump, driven by a 60-hp motor, provided the suction and pumping force. It has a rated capacity of 390 gpm under a 180-ft head. The suction end of the 4-in. rubber pipe line was suspended in the filter from a traveling overhead crane so that it could be raised or lowered and moved both longitudinally and transversely over the filter bed.

• **Screening material**—Upon arrival at the discharge end of the suction line, the sand and gravel were fed on to two vibrating sand screens mounted above sand bins. The gravel passes over the top screen and is chuted onto a set of four vibrating screens. It is collected below the screens and wheelbarrowed to stock piles in the same room.

The screened sand is pumped back into the filter, but the gravel is replaced by push cart and hand rake.

Under normal operations it is estimated that an eight-man crew can entirely rebuild one filter in a week.

All operations at Chicago's South District Filtration Plant are under the Department of Water and Sewers. James W. Jardine is commissioner. W. W. DeBerard is deputy commissioner for water and chief water engineer, and H. H. Gerstein is assistant chief water engineer.

New Cleveland water filtration plant
is Powered-Up to serve industrial
and residential expansion

YOU CAN BE SURE... IF IT'S Westinghouse

Cover photo:
View of raw water pump suction wells illuminated by Westinghouse VEK-16 floodlighting.

Project group discussing layout of Crown Filtration Plant includes J. E. Hrovat, Vice President of Engineering, Doan Electric Co., Electrical Contractors; E. E. Croushore, Westinghouse Construction Sales Engineer; L. O. Meyer, Branch Sales Manager, WESCO, Cleveland; Dan Kasych, Assistant Superintendent, Pump Building; G. L. Baughman, Chief Electrical Engineer, Havens and Emerson, Consulting Engineers; S. C. Simmermacher, Chief Mechanical Engineer, City of Cleveland; M. B. Trimble, Westinghouse Construction Sales Engineer; E. S. Goulder, President, Doan Electric Co.; and H. M. Stafford, Salesman, WESCO, Cleveland.

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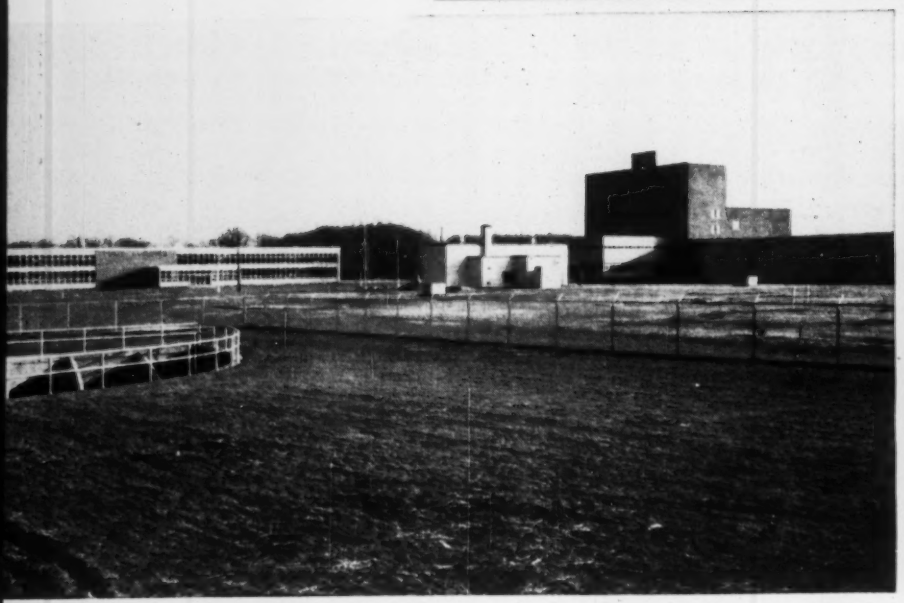
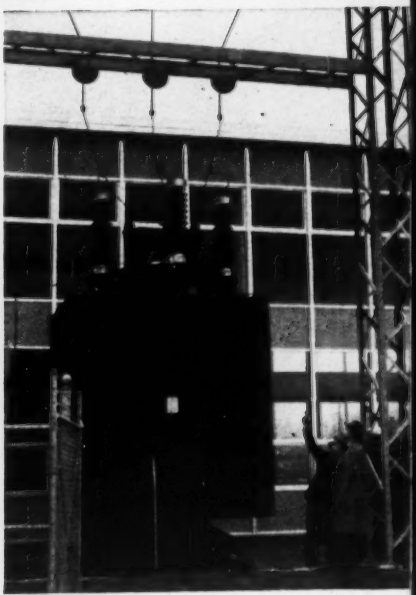


Over-all view of Crown Filtration Plant, Cleveland, Ohio. Pump building is at left and the filter building at right. Westinghouse OV-20 street lighting was provided for plant entrances and roadways.



Dan Kasych and E. E. Croushore examine one of the two Westinghouse 5000-kva power transformers which step incoming 34.5-kv service down to 4160 v for main pump drives.

Westinghouse system provides for 100% electrical load increase in new water pumping station

The new Crown Filtration Plant was designed to meet the growing need for water supply in the westerly suburbs of Cleveland, Ohio, and, as an important part of that planned expansion, the Westinghouse electrical system presently installed provides for 100% load increase without adding to the system.

The pumping station-filtration plant is located on a 55-acre site and is the newest addition to the city's expanding water supply system. Construction was started in 1953 and completed in 1958, and represents nearly a $20,000,000 investment. Present plant capacity is 50 mgd; but, because of anticipated future requirements, the plant has space and provision for additional equipment to provide capacity of 100 mgd.

Raw water is obtained through a crib 2½ miles offshore in Lake Erie. The water from the crib is carried through a connecting tunnel to a raw water well, where its handling is taken over by raw water submerged pumps. Treatment and flow of the water from this point through the filtration plant are automatic and exactly controlled, leading finally to a 15-million-gallon filtered water reservoir located in the southwest corner of the plant area. High service pumps deliver the water from the reservoir to both the low pressure zones and the first high pressure zones supplied by the Crown plant.

The major electrical elements supplied by Westinghouse to Power-Up this filtration operation include:

Two 5000-kva power transformers—to step utility service from 34.5 down to 5 kv.

Main metal-clad switchgear—to control and distribute power to motor starters (for L.S.) and provide for starting of H.S. motors (1750 hp).

Dry-type power center—to provide 480-v service to plant auxiliaries.

Westinghouse lighting throughout the plant area, including fluorescent, incandescent, street lighting and floodlighting.

In addition, Westinghouse supplied the many lighting and distribution panelboards required in the plant's operation.

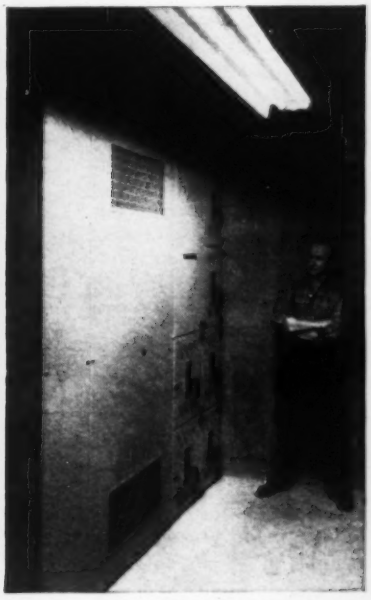
The planned Powering-Up of the Crown Filtration Plant means it can meet all foreseeable future requirements with a minimum of modification. Additional water handling and treating facilities can be installed in areas already provided for them. And all such additional equipment can be operated without adding to the existing electrical distribution system.

(*contd.*)

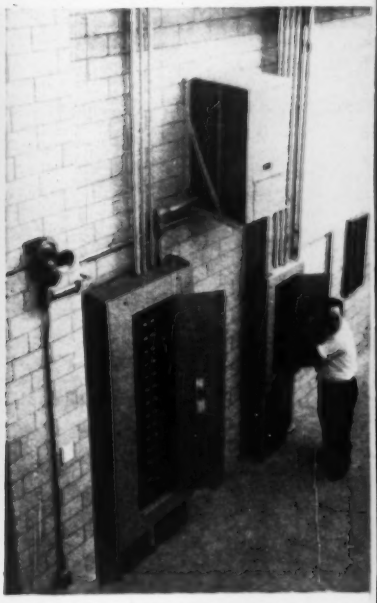
YOU CAN BE **SURE**...IF IT'S

Westinghouse

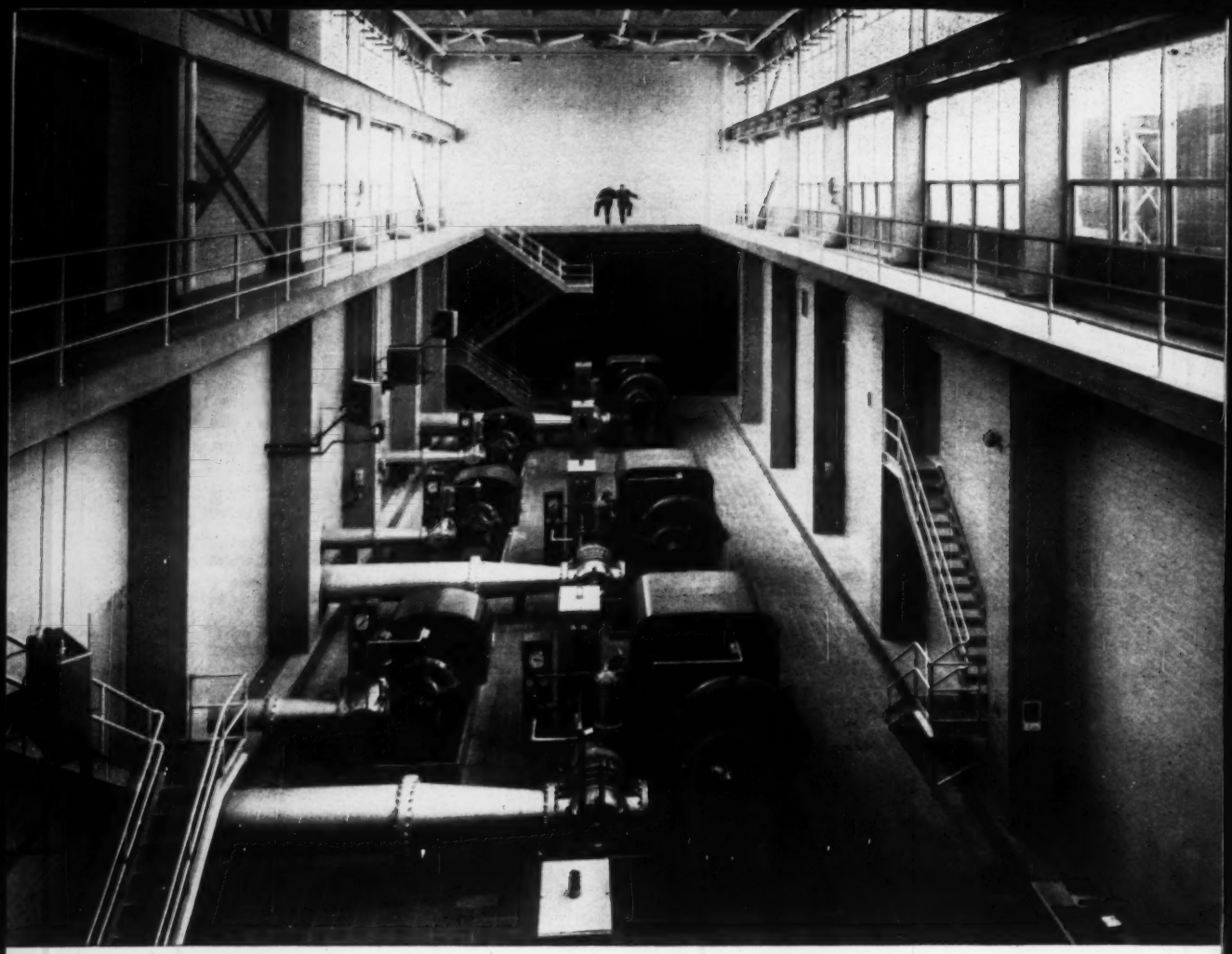
View in main switchgear room with G. L. Baughman, M. B. Trimble and S. C. Simmermacher examining Westinghouse metal-clad switchgear. Lineup at right contains main incoming line breakers, bus tie breaker, reactor starters for high service pump motors, and feeder breakers for power center and low service pump motor starters. Five-kv bus duct overhead provides connections from metal-clad switchgear to Ampgard* high-voltage fused starters at left. *Trade-Mark



Dan Kasych inspects switchgear room. Westinghouse 225-kva power center utilizes dry-type transformers and DB low-voltage air circuit breakers to supply power panels throughout pump building. Room lighting is Westinghouse 2 SPC-75 slimline fluorescent luminaires.



Westinghouse CDP power distribution panelboard and wall-mounted 37.5-kva dry-type transformer feeding NLAB lighting panelboard. J-94123-3



Section of main pump floor showing the three 25-mgd high service pumps and three 8-mgd low service pumps which are presently installed. Metal-clad switchgear cubicles and Ampgard high-voltage starters for these and two additional future pumps of each rating are installed in the main switchgear room. High bay mercury-vapor lighting is provided by Westinghouse Millite® luminaires.

(contd.)

Electrical system provides for 100% load increase

Powering-Up electrically for future growth can mean important benefits and savings for you. For further information, call the Westinghouse electrical construction engineer nearest you, or write: Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pennsylvania. J-94123-4

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Over 250 Pages Westinghouse Data in Sweet's Construction File.

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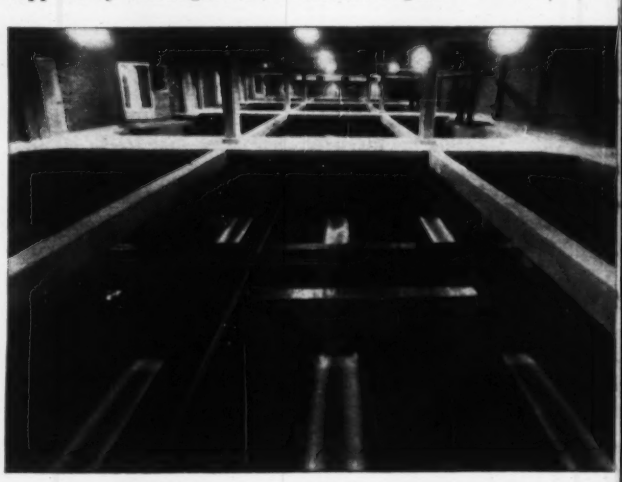
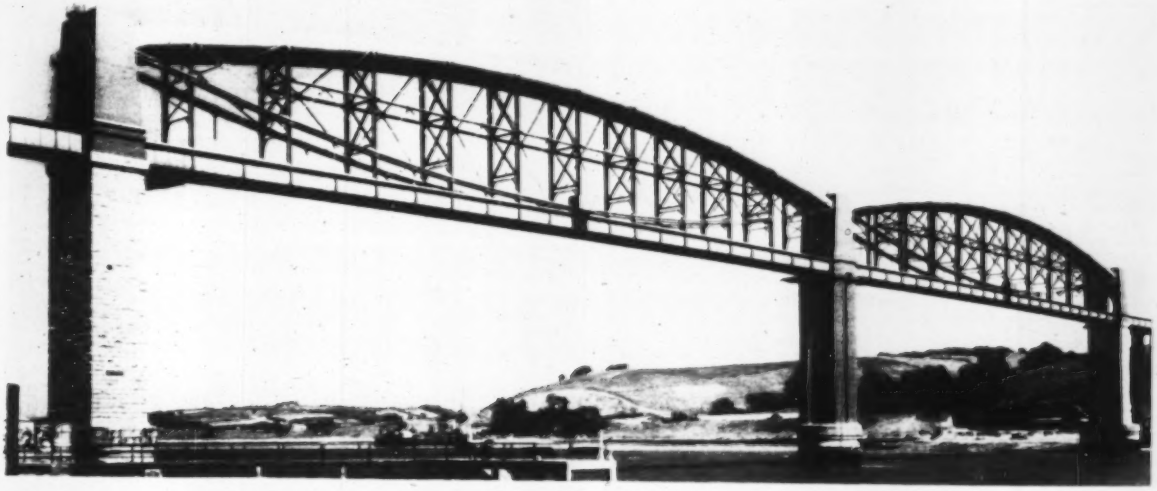
View in filter building showing row of clarified water filter beds. Under average flow conditions, the 12 filters in the plant will pass a total of 50 mgd. Lighting is supplied by Westinghouse VEK-16 floodlights.



Erected Like This 100 Years Ago . . .



. . . Bridge Still Shows Daring Concept

It happened a century ago, but the bridge erection job preserved for posterity in the top picture would draw engineers and construction men from far and wide if it were repeated today. For despite the great advances of the intervening one hundred years, the ingenuity and the daring exhibited in both the design and the construction methods used for this railway crossing of the Tamar River at Saltash, England, would excite admiration.

For this very reason, the centennial of the ceremony marking the completion of the bridge was celebrated in elaborate fashion recently in the village of Saltash and in the nearby port city of Portsmouth.

The bridge was created by I. K. Brunel, one of the great engineers of Britain's early railroad, canal and harbor building era. Some of his famous contemporaries and friends were John Rennie, remembered for his bridges over the Thames at London; Thomas Telford, noted for his chain suspension bridge over Menai Strait in Wales; and Robert Stephenson, famed for his Menai Strait tubular bridge, on which the trains run inside the tubes.

Brunel contributed to the bridge building art by pioneering in the use of wrought iron and by introducing trusses in which a large single tube was employed as the top chord. The British magazine ENGINEERING took note of this in its April 24 issue by publishing an article on Brunel's contributions to the

Photos courtesy of British Railways (Western Region). The top picture is a reproduction of a 100-year-old photograph.

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Why? Because rental dealers *know* air compressors through and through . . . dependability, operation, costs, maintenance. These are the factors that make profits and keep customers happy. And these are the reasons why so many rental dealers depend on Schramm. Today, most rental fleets use piston-type compressors—and almost all of the largest, most profitable use Schramm. Just look around and see.

Here's why Schramm Compressors are so widely used in rental fleets . . .

Easy to Operate Rental Dealers know that Schramm Compressors will stand up under the toughest conditions, can be operated by anyone with practically no instruction, require almost no attention.

Easy to Tow Schramm Compressors are exceptionally easy to handle, easy to tow from place to place. They're the lightest, smallest, most compact compressors made—up to 250 pounds lighter in the 125 cfm class.

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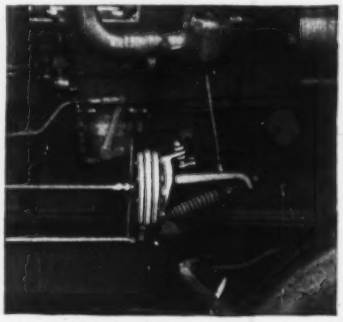
Rental Dealers use Schramm Compressors because they know from experience that their customers get top performance, fewer headaches. These same benefits can be yours. Ask your local Schramm Dealer about them, or write for your copy of Bulletin SPP-58.

See the Yellow Pages for local Sales, Service and Rental of Schramm Air Compressors.

Next time *you're* thinking of renting, consider a self-propelled Schramm Pneumatractor—combination air compressor—tractor. One man drives it along with the work.



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. . . 100-year-old bridge

art of bridge engineering. Author P. S. A. Berridge, assistant engineer (bridges) Western Region, British Railways, devoted a section to Brunel's crowning masterpiece, the Saltash Bridge.

In the Royal Albert Bridge (its official name), Mr. Berridge wrote, "Brunel used a combination of suspension chains and tubes for the trusses of the 455 ft spans . . . A continuous web system consisting of diagonal flats was designed to restrain the longitudinal displacement of the 11 verticals under the changing conditions of loading with the passage of trains.

"The wrought iron tubes are elliptical in cross section, 16 ft 9 in. broad and 12 ft 3 in. in height. The trusses have a depth of 56 ft in the center (between the top cord tube and the bottom cord chains). Each chain consists of two tiers of links, each tier being formed of 14 and 15 links alternately, and each link being 7 in. deep and about 1 in. thick. . . . The tubes are connected together over the center pier, and at the other ends they rest on rollers on top of the piers.

"The difficult operations of floating and lifting the superstructures of the Chepstow (an earlier and smaller tubular chord structure) and Saltash bridges were carried out entirely by Brunel and his assistants, there being no contractor. . . . At Chepstow, erection had been piecemeal, the tube being raised first and then the truss built from it. But at Saltash each truss was put together on shore and floated out on pontoons.

"The end portions of the deck girders were raised to give room for the jacking arrangements while lifting the truss. The total weight of wrought iron work of each span as floated out was 1,060 tons. Each truss was floated out on a rising tide, and after being warped into position over the piers was landed on the falling tide. . . . The piers were built up as the trusses were jacked up stage by stage, 3 ft at a time, at each end. The trusses had to be raised through 87 ft, and this operation took eight months for the first span and five months for the second one."

The Saltash Birdge still preserves its original appearance despite the substitution of heavier vertical sway frames and the introduction of a lengthwise strut at the mid-height of the trusses.

Since its completion one hundred years ago, the bridge has carried in large raised letters over each end portal the inscription, "I. K. Brunel, Engineer, 1859." As a part of the recent centennial celebration, a plaque attesting to the same fact was unveiled in the Saltash railway station as floodlights were played on the nearby bridge.

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I CAN'T DRAW ON THESE THINGS...THEY'RE ALL TAPE NOW!
I'VE HAD MY GLASSES CHANGED 4 TIMES AND I STILL CAN'T READ 'EM
THE ONLY THINGS THAT SHOW UP ON THE BLUEPRINTS ARE TAPEMARKS AND CREASES
IT'S GOOD THE GUYS IN THE SHOP HAVE GOOD MEMORIES
HE SHOULD CALL IN A JUNKMAN...OR ASK A BLUEPRINTER ABOUT AUTOPOSITIVE PAPER INTERMEDIATES

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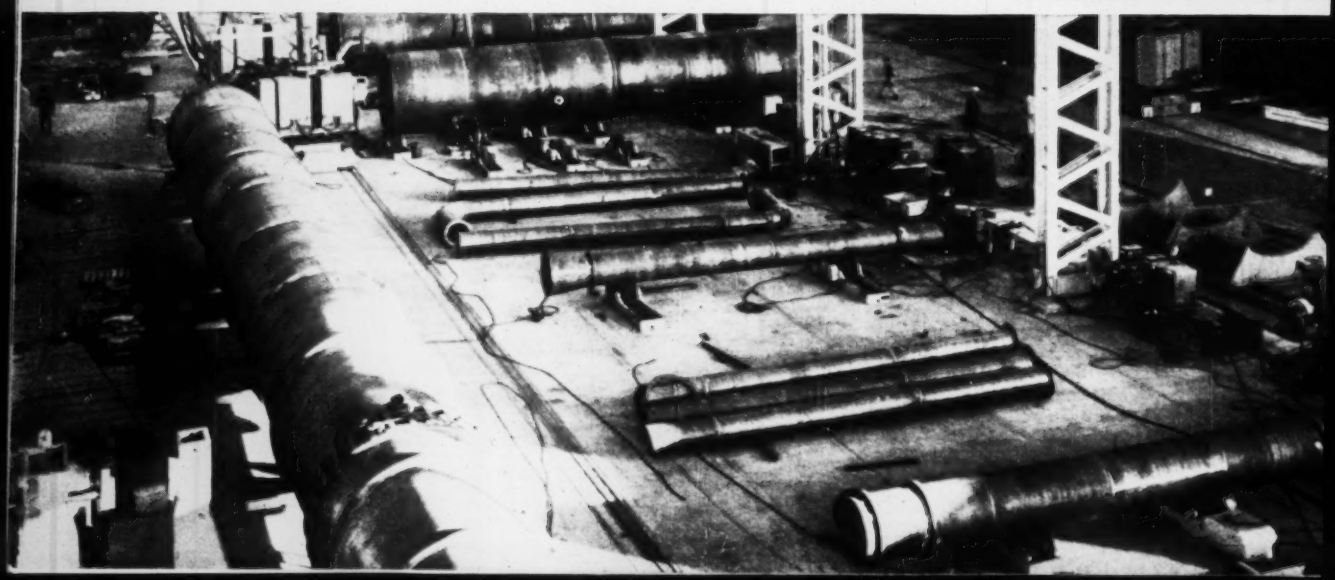
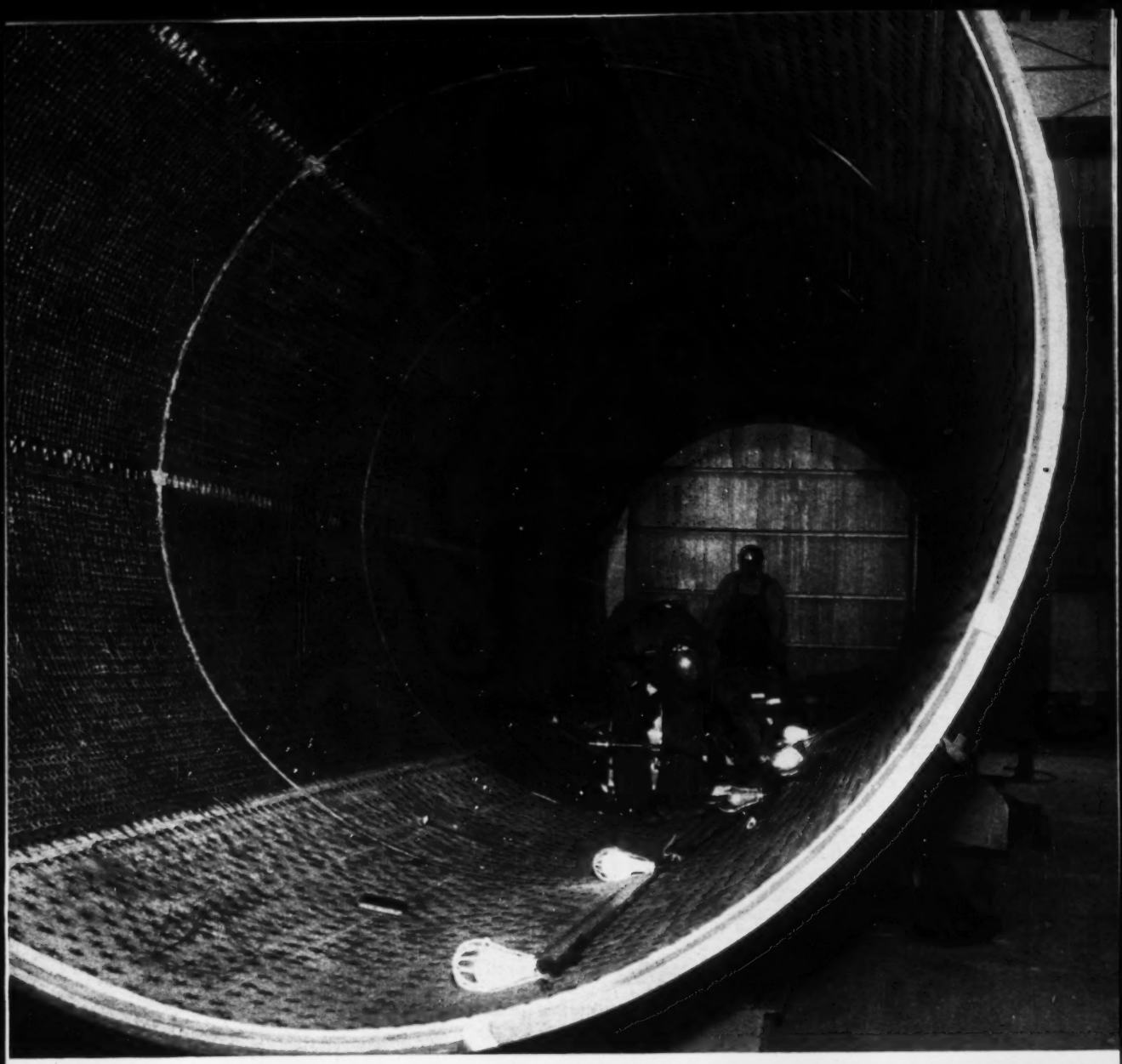
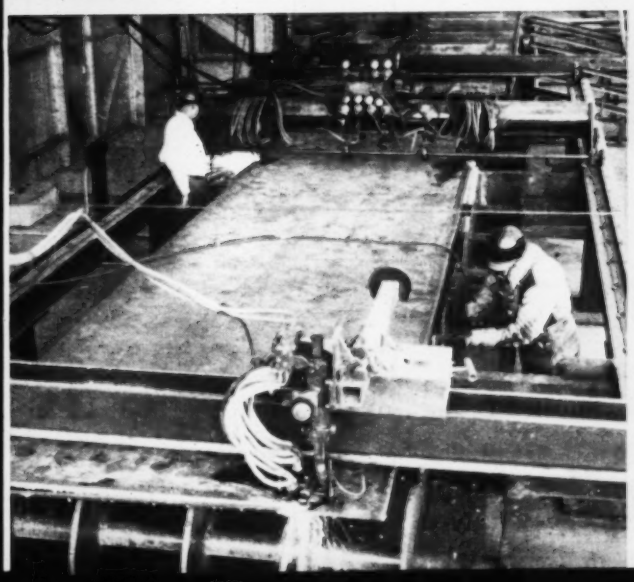
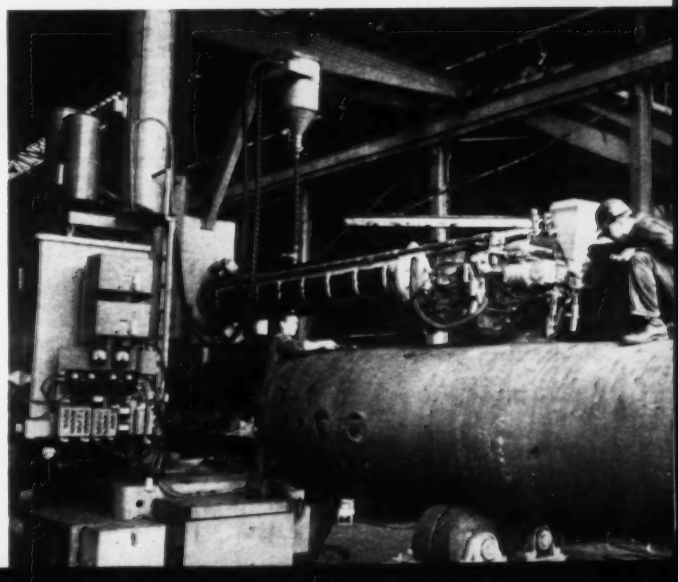


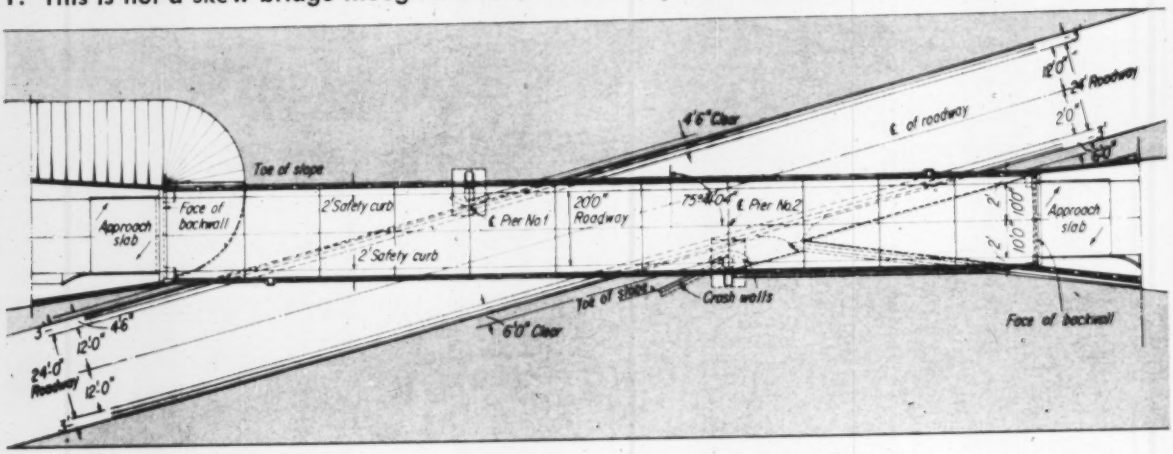




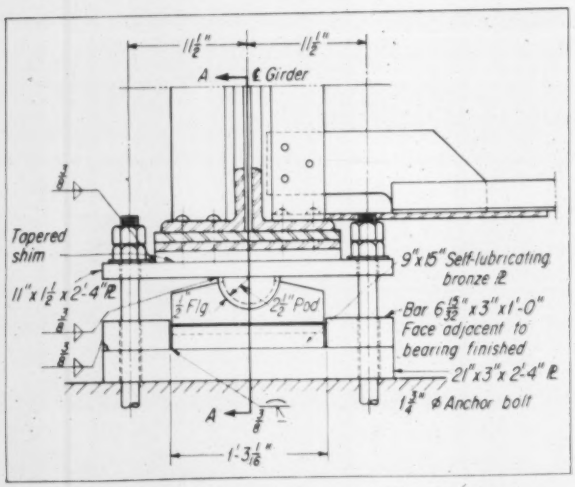


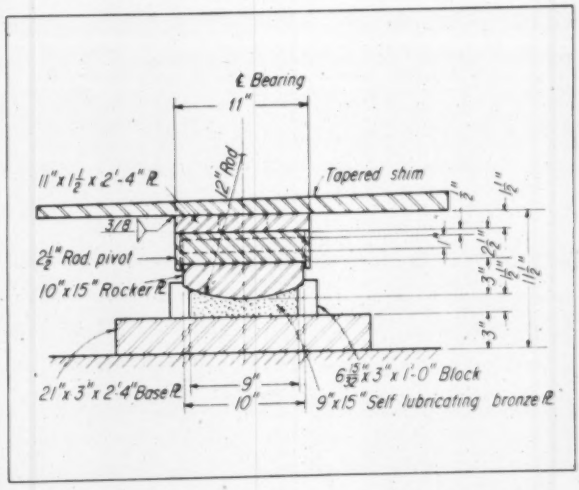
Highway Bridge Has a Reverse

1. This is not a skew bridge though it crosses a roadway at a 75 degree skew angle.



2. Unusual pier location poses some interesting problems in girder deflection.





3. Special bearings were needed for two-plane girder rotation and for expansion and contraction.

Twist

It's at a 75 degree skew—but it's not a skew bridge.

Each girder has two unequal spans—but these spans don't match up.

Deflections are unequal in the girders—so bearings have to permit two-plane rotation.

This is really a bridge designed with a reverse twist.

The bridge is part of the $56-million, 34-mile expressway system being constructed in Jacksonville, Fla. It's a 240-ft plate-girder structure in which each of the two main girders (20 ft c-c) is supported between the abutments on its own pier. One pier is 80 ft from one abutment face; the other pier is 80 ft from the opposite abutment.

While each girder is continuous over two spans—one of 80 ft, the other of 160 ft—the long span of one girder is opposite the short span of the other.

Floor beams, spanning the 20 ft between girders at 21-ft intervals, are 27 WF 84 sections. (These beams also serve as top members of the vertical cross-bracing trusses.) Stringers, riveted to the beams at their third points, are 18 WF 50 sections. The structural deck is cast-in-place reinforced concrete 6½ in. thick. It was placed in sections located to balance one another so as to prevent undue distortion of the girders.

The design was dictated by the extreme skew angle, which in turn was required to fit a large number of roadway lanes into a narrow right-of-way.

The expressway just north of the area is eight lanes wide. Southbound traffic must split into two segments—one headed east towards the Atlantic Ocean, the other headed southward to U. S. Route 1. A short running distance between entrances and exits makes weaving dangerous, so a bridge had to be built to carry traffic from the inside southbound lanes across the outside lanes without the need for weaving.

Several standard types of structures—simple spans, cantilevers, and various combinations—were considered. Each of these would have required either an extremely long pier placed like a wall parallel to the bridged roadway below, or a wide pier built over the roadway with traffic going between the pier legs. Each was rejected because of cost, appearance, connection difficulties, or a combination of the three.

Grades and sight distances are critical and headroom on the lower roadway had to be maintained. Depth of the bridge girders had to be kept to a

New • Rugged ELECTRIC VIBRATOR

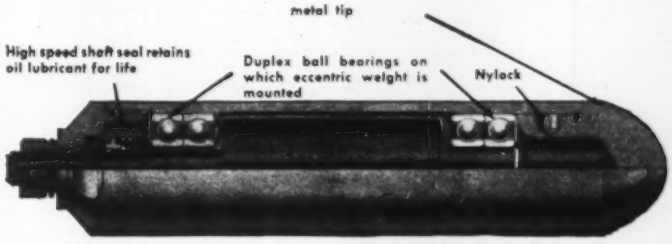
DELIVERS 9000 VPM AT 2 HP

UL approved

This new electric concrete vibrator, developed by STOW MANUFACTURING COMPANY, Binghamton, N. Y., features a new lightweight vibrator head that delivers, at high amplitude, 9000 vibrations per minute to the mix.

This vibrator, STOW model BU, is powered by a totally enclosed 2 HP Universal motor, operating on 115 volts AC, or DC, 25 to 60 cycles. The motor is protected by a skid mounting, so arranged that the unit can be easily pulled around by the flexible shaft.

Take a look at this vibrator head. It is 10 inches long, and available in diameters of 1⅝, 2 and 2½ inches, capable of 9000 VPM. Vibrations are achieved by use of an eccentric weight mounted in special high speed duplux ball bearings at each end. The outside of the head is case hardened, for extra long wear, and it has a replaceable steel tool tip. STOW estimates that these two improvements alone will double the life of the heads.


metal tip
High speed shaft seal retains oil lubricant for life
Duplex ball bearings on which eccentric weight is mounted
Nylock

Construction men report that they like the light weight, the long life, the low replacement cost, and the terrific wallop of these heads. Weight of the 1⅝" head is about 5 lbs.; the 2" head about 7½ lbs.; the 2½" head, about 9 lbs. The cost of this head is less than 1/3 the cost of expensive motor-built-in type heads.

The 1⅝" head is also available with a hard rubber tip for use where plywood forms are being used.

For more information about the complete line of STOW concrete electric and gasoline vibrators, vibrating screeds and rotary trowels, contact your STOW distributor, or write for STOW catalog 580.

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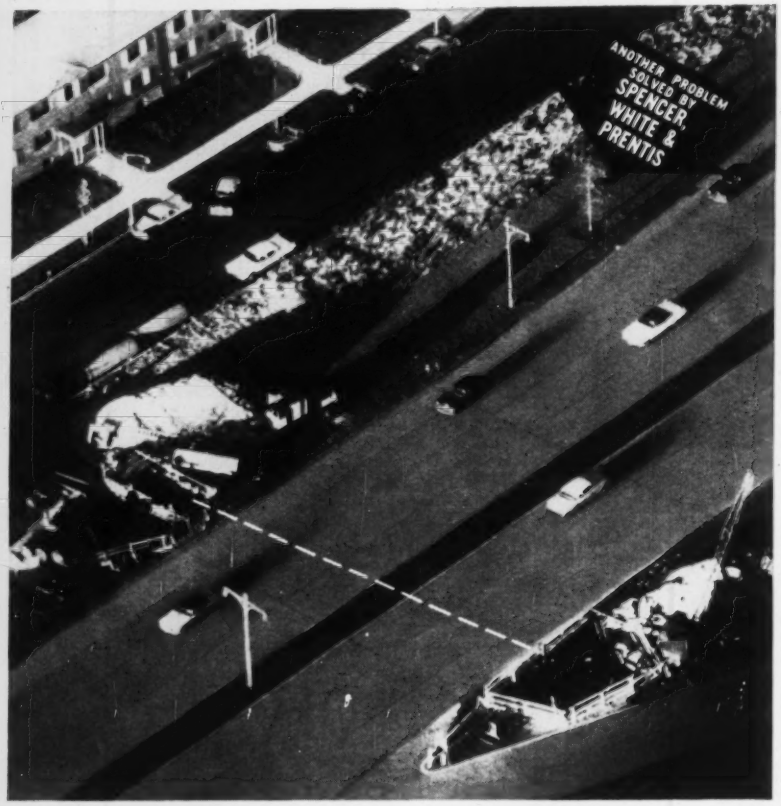
JACK 66-IN. PIPE UNDER 6-LANE HIGHWAY AS TRAFFIC FLOWS



Project: Installation of 48-in. water main under Shore Parkway at 89th St., Queens, N. Y.
Owner: New York City Department of Water Supply, Gas and Electricity
General Contractor: T. & T. Contracting Corp., New York City

Jacking a 66-in. diameter pipe 102 ft. from one end (dotted line indicates path) poses complex problems, all of which were solved advantageously on this project.

The operation was carried through without sinking a shaft at midpoint, as was originally planned. There was no interruption of traffic on the 6-lane highway as the steel shell was jacked under it, nor was there any settlement.

Close accuracy in estimating the necessary jacking force was one important feature. Another was the planning of work-shifts without any lengthy shut-downs, thus avoiding build-up of jacking pressure. A 48-in. concrete water line was later jacked inside the shell.

DESCRIPTIVE LITERATURE ON REQUEST

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. . . Reverse twist

minimum. Because of this, and the long spans required, designers decided that continuous construction would be most advantageous.

The roadway is only 20 ft wide, and two plate girders 7 ft ¼ in. deep were deemed sufficient. By shifting the piers in opposite directions from mid spans enough space was provided to permit lower road traffic to pass between them.

The design also permitted construction of the entire superstructure with no skewed connections. This helped cut costs by simplifying fabrication and speeding erection.

Unusual deformations are expected to develop in the girders. Location of the piers produced some interesting questions on deflections. The designers expect some twisting of the entire superstructure about its longitudinal axis. To avoid trouble in the 6½-in.-thick concrete roadway transverse joints were placed through the slab at each floor beam. Deflections were computed for the individual girders, and torsional stiffness was neglected. A field check on the final girder deflections is reported to have substantiated the computation.

The skew construction of the bridge will result in rotation of the girders in two planes. Therefore, the intermediate supports for the structure had to provide for this dual-directional rotation, as well as for expansion. A special bearing (see drawings p. 48) was designed to permit these movements.

One of the components of the bearing is a 2½-in. radius pivot set parallel to the longitudinal axis of the bridge. It permits transverse rotation of the girder. A rocker plate takes care of the longitudinal deflection of the girder. And a self-lubricating bronze plate permits expansion and contraction.

The cost of the bridge, exclusive of retaining walls, but including superstructure, piers and abutments, came to about $115,000, or $17.70 per sq ft. Reynolds, Smith and Hills, architects-engineers of Jacksonville, designed the structure for the Florida State Road Department. Wylie N. Jackson Construction Co., Roanoke, Va. was the contractor.

South Carolina Studies River-Dredging Project

South Carolina's legislature will set up a nine-man committee to study the feasibility of making the Congaree River navigable from Columbia to Charleston. It will report to the 1960 General Assembly.

Parts of the river are navigable below lock-equipped Lakes Moultrie and Marion, which serve the state-owned Santee-Cooper electric power project.

Some useful tricks in pile-driving

Here are ingenious solutions to the problems of driving 60′ long, 12″ H-piles for bridge piers, in an area where soft ground made it necessary to eliminate driving guides so as to reduce weight. The rig consisted of a Lima crane and Vulcan # 1 hammer, with a Jaeger 600 cfm rotary air compressor to supply the wallop.

1: USE CAGE TO STABILIZE FREE-HANGING HAMMER:

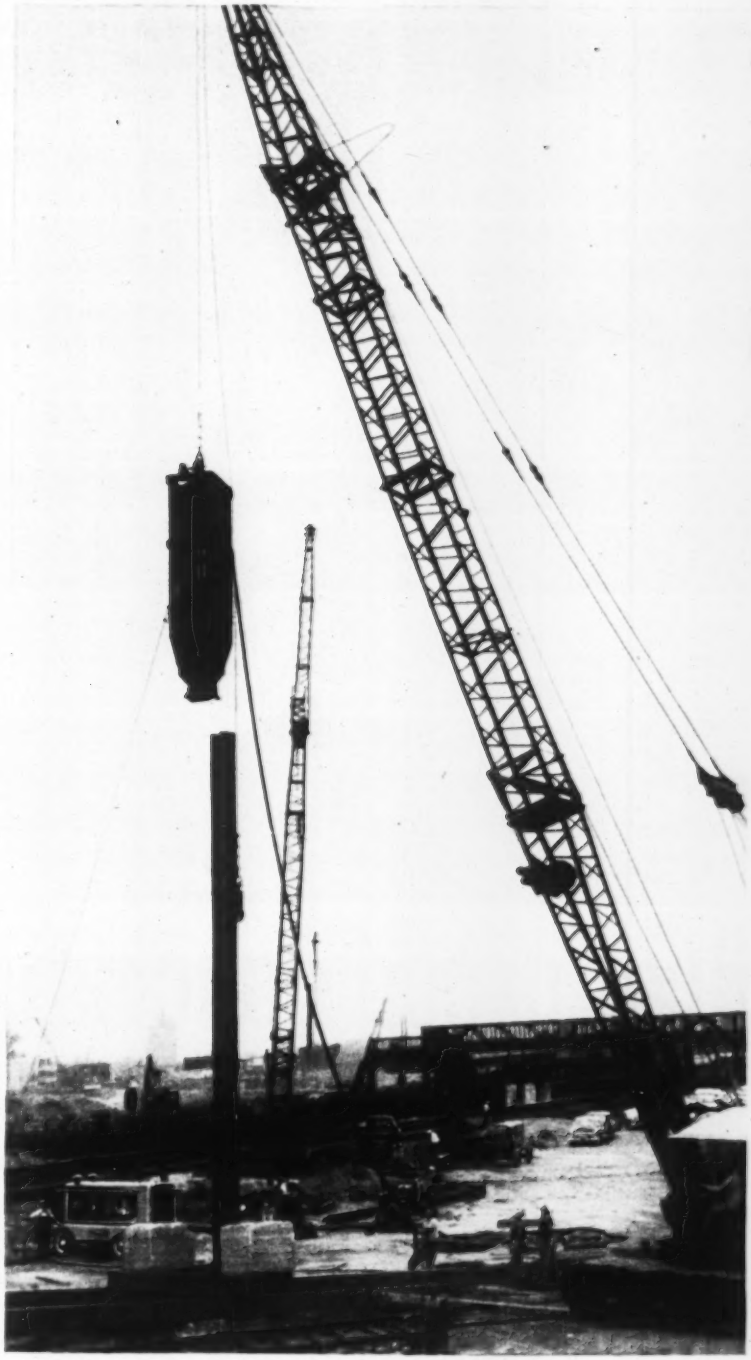
Weight of heavy pile driving guides was eliminated by enclosing the hammer in a cage equipped with a collar to slip over the top of the pile.

2: POSITION PILES WITH NOTCHED BEAMS, HELD BY BLOCKS:

Piles were placed between two beams laid across long members spanning the pile pit and held by large concrete blocks. Steel bars in the beam notches maintain correct alignment.

3: WHEN A BATTER IS DESIRED, USE FREE HAMMER TO TILT PILE:

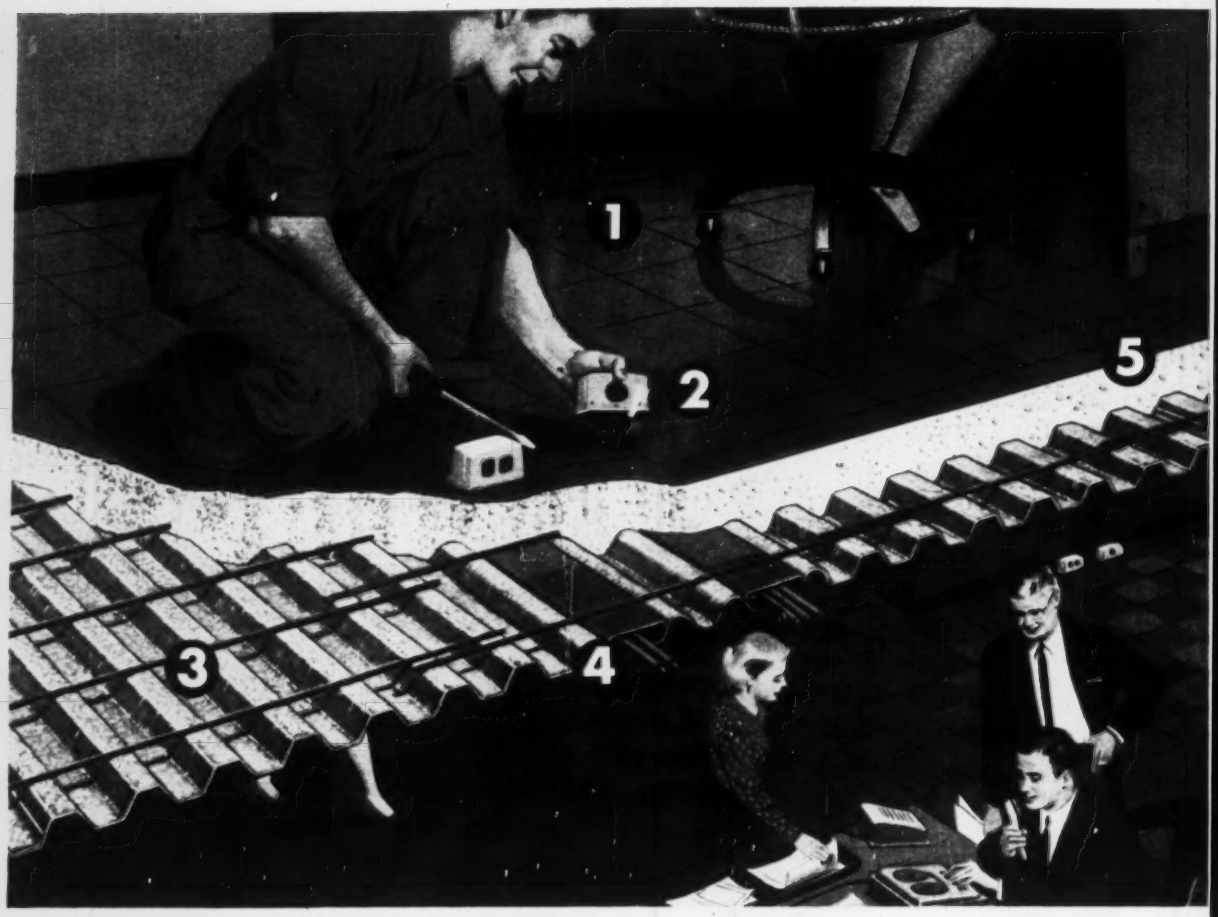
Weight of hammer, on top of pile, tilts pile to desired angle while bars hold lower end of pile in place.



4: USE STEADY, LOW-COST JAEGER AIR

On the above job, piles were driven to point where 35 blows were needed to drive 1″. Depths varied from 35′ to 105′. A Jaeger "600" rotary compressor was used because it maintains steady air pressure under the widely fluctuating demands of pile driving, and produces each 500 cu. ft. of that air with less than 1 lb. of fuel. Full load speed is only 1700 rpm compared with 1800 rpm in all other rotaries which use the same GM 6-71 diesel engine.

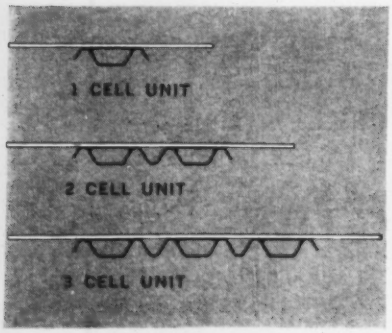
Ask your Jaeger distributor about these efficient rotaries for your work — or send for latest catalog. The Jaeger Machine Company, 200 Dublin Avenue, Columbus 16, Ohio.



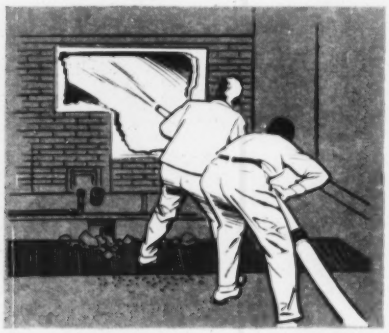
Reinforced concrete floors now

Cofar steel units provide both *form* and *reinforcement* for concrete floor slabs. Add special E/R (Electrically Ready) Cofar units to the system and, immediately, you satisfy the one remaining requirement of modern office floor construction—raceways for *complete electrification* to meet present and future needs.

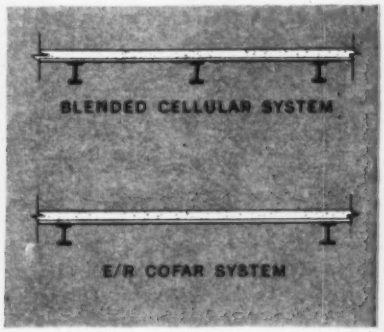
E/R units are wide troughs capped to form spacious cells for wiring. They are placed between standard Cofar units. Result: a solid, continuous base for concrete. Check these other features of the Cofar system:



ALL THE ELECTRIFICATION YOU NEED. By blending in one-, two-, or three-cell E/R units with standard Cofar sections you meet office electrical needs today and tomorrow.



FIRE RETARDANT. In a two-hour UL fire test, E/R Cofar became the first electrified cellular floor system (with header ducts and junction boxes in place) to earn a fire-retardant rating.



LESS FRAMING. Cofar reinforced concrete design permits wider spans, saves on structural framing costs, speeds up building completion and permits earlier occupancy by the owner.

1. **LOW-COST, HIGH-STRENGTH FLOOR** is made electrically flexible through the use of cellular E/R Cofar units.
2. **CLOSELY SPACED E/R CELLS** permit you to place outlets where desired, give building owners extra flexibility in positioning their office equipment.
3. **NO COMPLICATED FORMS** with Cofar! During construction, units serve as working platform and tight form for wet concrete.
4. **LARGE CELLS** (5.2 sq. in.) carry power, phone, signal circuits direct to desks and machines *anywhere* on the floor.
5. **NO WASTED FILL.** Cofar and concrete combine to give an intergated structural slab. No extra leveling fill is needed.
6. **AMPLE WIRING** through E/R Cofar units. Each cell can accommodate as many as 110 single-station phones, 19 six-key phones or 250 service outlets.
7. **PLACED ON ANY DESIRED CENTER.** E/R units can meet present and future electrical needs. Spacing of units is "tailored" to your individual job. No wasted cells!

fully electrified with E/R Cofar

- Effective span range up to 16 feet.
- Long-span construction means less framing.
- Less framing means less fireproofing.
- No wood forms to erect or remove.
- Optional pre-set inserts are available.

Other important advantages of the Cofar system are shown in the illustrations above and below. If you would like more information on Cofar and E/R Cofar details, design procedures and specifications, it's yours for the asking. Use coupon in lower right-hand corner.

COAST TO COAST. Cofar and E/R Cofar are available through more than 100 Granco distributors in the U. S. Granco also assures you fast, dependable delivery and helpful field assistance.

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CAMPUS-LIKE nuclear setup has buildings for experiments (1), administration-engineering (2), general services (3) and science (4).

Research Complex Shaped to a

One of the largest private nuclear research facilities in the world has recently been occupied by General Atomic, a division of General Dynamics Corp., on a 300-acre site a short distance beyond the north city limits of San Diego, Calif.

Size, however, is only one of the notable characteristics of the John J. Hopkins Laboratory, which includes five buildings grouped to present a campus-like appearance while satisfying functional considerations.

Most significant is the design, which uses both rectilinear and circular forms to fit the layout to the natural configuration of the hilltop site.

Also important is the use of a simple framing of rigid steel bents that are left exposed as architectural elements. This framing design gives the buildings a distinctive appearance and is credited with lowering construction costs and speeding erection.

The principal elements of the layout include a rectangular administration-engineering building; an L-shaped experimental building; two arc-shaped science buildings, which house laboratories and offices; and a circular general services building providing large conference rooms, a library and a cafeteria.

At the perimeter of the site are several small buildings housing an accelerator and the critical assembly facility. All-told the floor area in the $10-million laboratory complex totals 250,000 sq ft.

In addition to having what might be called a standardized steel frame, the buildings are alike in other respects. All have sun-shaded walks around their perimeters inside the legs of the frames. Roofs, the upper portions of the side walls and the sun canopies are of steel decking units; walls below the steel decking are integral colored and textured concrete block or steel window-wall units. The steel roof decks are covered with 2 in. of rigid insulation and composition roofing. All floors are concrete slabs covered either with terrazzo or resilient tile.

Beyond these common characteristics, which tend to integrate the buildings in general style and makeup, each building is special according to its function. The two arc-shaped science buildings, for example, have to accommodate many small individual laboratories, each with its separate office. In each of them, therefore, labs are arranged on either side of a "mechanical core," which runs the length of the structure. The offices are across a hall from the labs and along the exterior walls of the building.

Because of their location along the brow of a circular hill, these buildings are are shaped, and the labs and offices on one side of the mechanical core are at a higher elevation than those on the other. Since the floor-to-ceiling height of the labs is nearly twice that of the offices, the roof is in a series of steps, with the edges turned down as sunshades.

The mechanical service core separating the two laboratory areas provides space for piping and exhaust fans. Each laboratory has provision for a fume hood installation. Stubs for necessary mechanical and electrical services are extended from the service core.

The air conditioning system can be readily modified in the mechanical core to accommodate changes in heat load. A variety of special electric power services is supplied through floor trenches, and low cost lighting with color corrective mercury vapor fixtures is provided.

A total of 95,000 sq ft of floor space is provided in these science buildings for research work in metallurgy, chemistry, experimental physics and reactor operation. The buildings also contain

TERRACED LANDSCAPING supplements the striking architecture of the circular general services building.

Hilltop Site

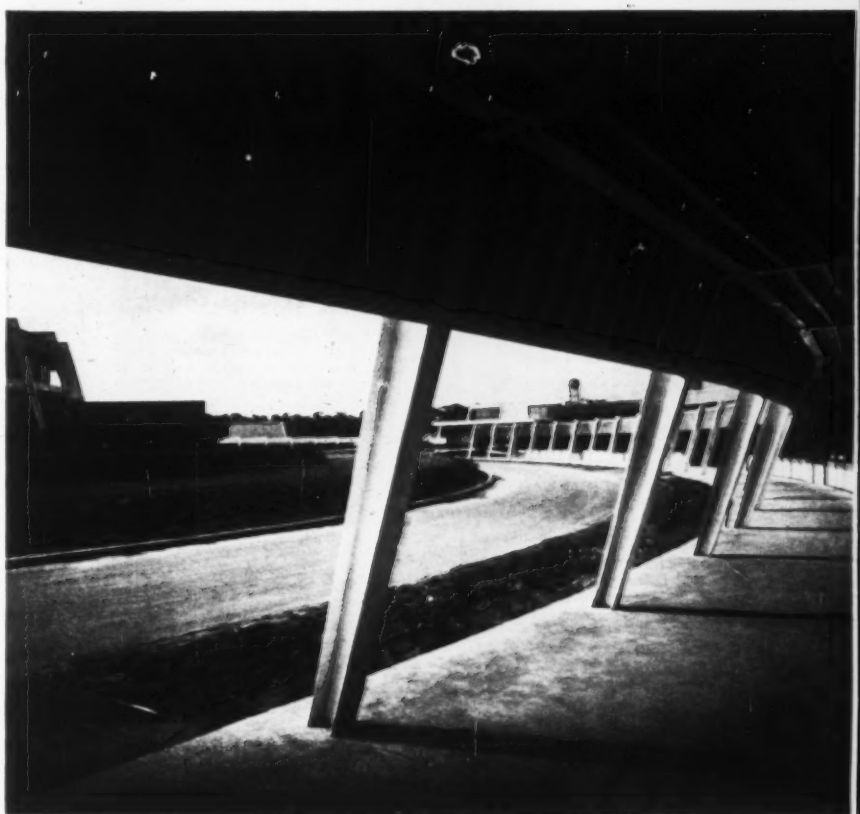
low-level hot-cell facilities for special studies.

The function of the 55,000-sq-ft, L-shaped experimental building also determined its form. Here are housed metallurgical research and fabrication equipment, shop facilities and equipment for large-scale experiments. It also includes apparatus for handling enriched nuclear materials, and houses the production machinery for General Atomic's new fuel elements.

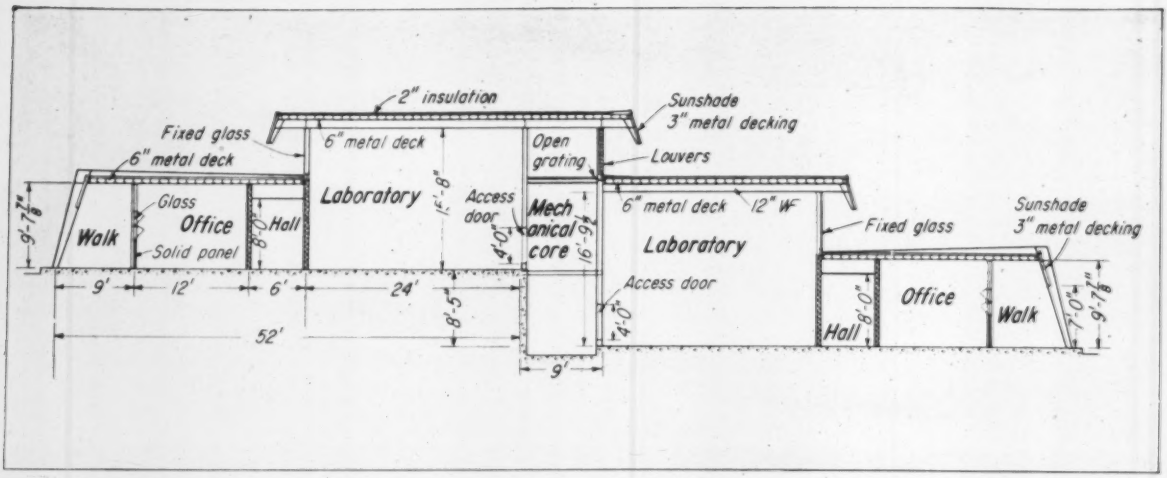
All of these facilities are concentrated in one leg of the L, where the rigid frames span 148 ft and provide a clear ceiling height of 30 ft. Running the length of this high bay is a 20-ton, 60-ft-span traveling crane for servicing the heavy equipment and for assembling large experimental mockups. The other leg of the building, of normal one-story height, contains offices, central stores and laboratories.

To introduce large quantities of outside air to the high bay area without the use of louvers, the upper portion of the metal side walls is canted out from the lower masonry walls. This overhang permits air to enter freely under the roof. It also forms an outside covered walkway.

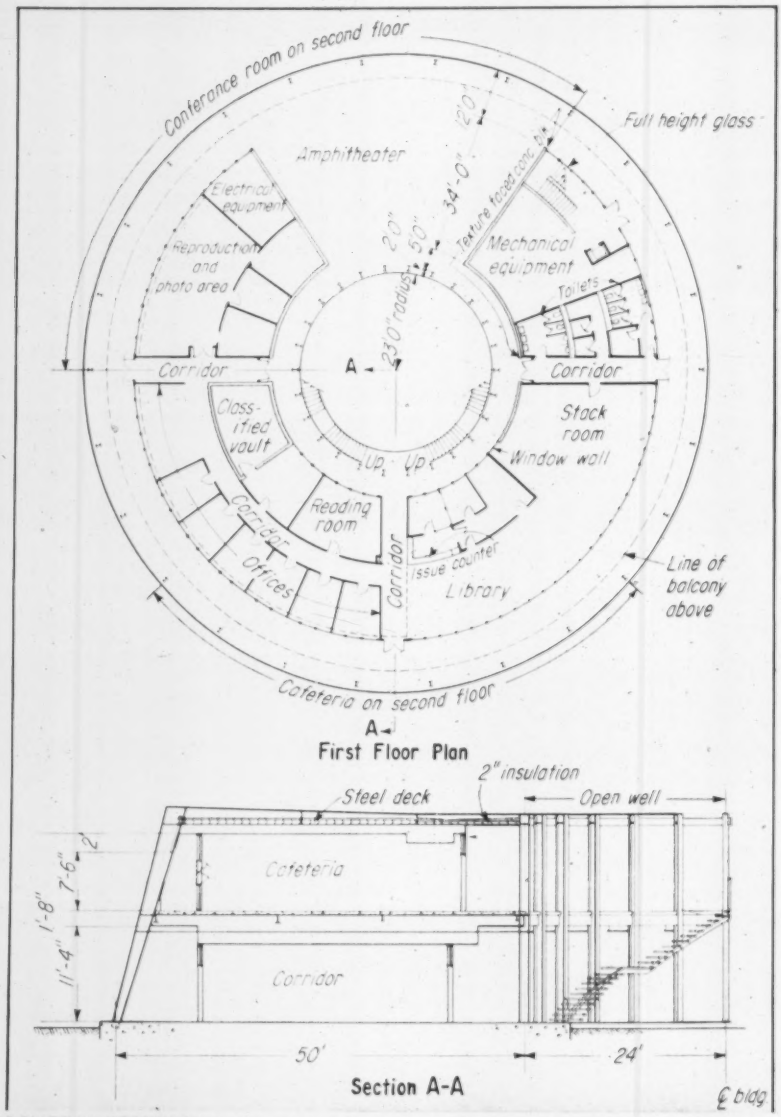
(*Turn the page*)



RIGID STEEL BENTS frame all buildings and form shaded walks.



SCIENCE BUILDING section shows how laboratories and offices are arranged at two levels on either side of a mechanical core.



GENERAL SERVICES framing consists of two-story rigid frames of 48-ft span set radially around an open center well. Stairs follow the wall of the central well.

The circular two-story building at the hub of the building complex and concentric with the arc-shaped science buildings is a general service structure housing, on the first floor, a library and such technical information facilities as printing, reproduction and photographic equipment, and, on the second floor, a cafeteria.

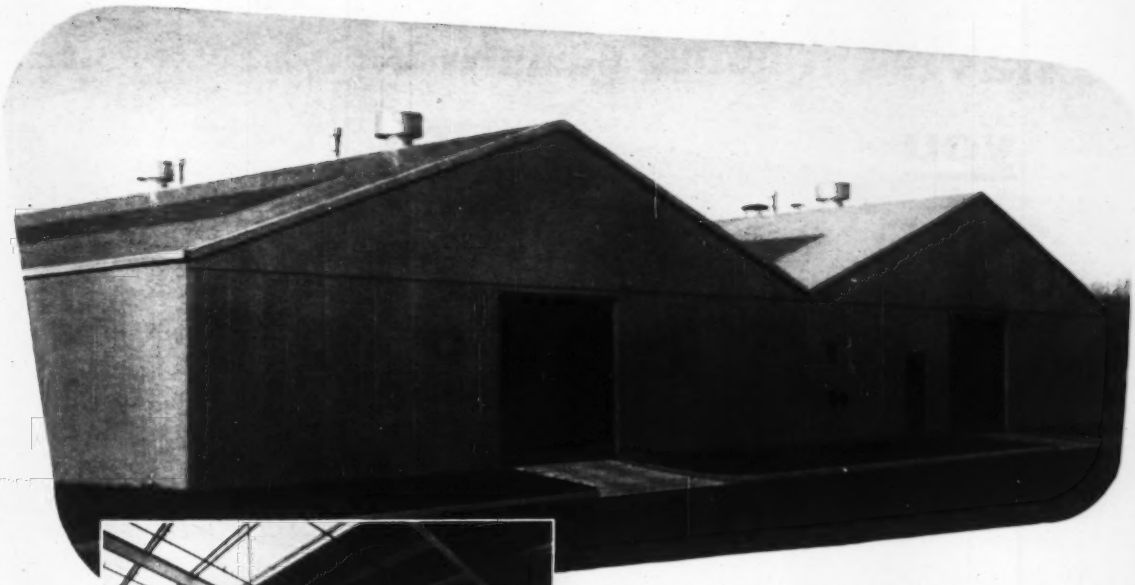
There is also an amphitheater on the first floor with large conference rooms above it.

The framing of this 144-ft-dia building consists of two-story rigid frames of 48-ft span set radially around an open center well. The inner legs of the frames are vertical while the outer ones slope and are completely outside the exterior walls of the building. Covered walkways encircle the building at both levels. The stairs connecting the first and second floors follow the walls of the central well as shown in one of the accompanying drawings.

The fifth building of the layout, the so-called administration-engineering building, is less special than the others, being rectangular in plan and containing a conventional arrangement of offices and drafting rooms. Its frame, exposed as on the other buildings, is, however, somewhat different since the first story bents are of 96-ft span, while the second story bents span only 74 ft. These second story bents are not in the center, but are placed to one side. Thus one of the sloping legs can be a continuation of the leg of the first story bent.

On the opposite side of the building, the other leg of this second story bent is carried on the girder of the first story bent.

The John Jay Hopkins Laboratory was designed by Charles Luckman Associates of Los Angeles and New York, successor to Pereira & Luckman. The general contractor was Haas-Haynie-Frandsen, Inc., Los Angeles.



This Parkersburg SF Series multiple metal building was erected for a West Virginia metal product manufacturer. Original plans called for a 60′ x 120′ building. Before completion of the first building the manufacturer decided to double his capacity. Two weeks after the second unit arrived at the job site, machinery was moving in and production was underway.

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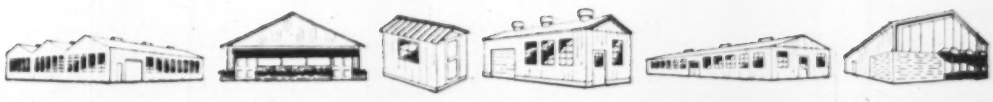
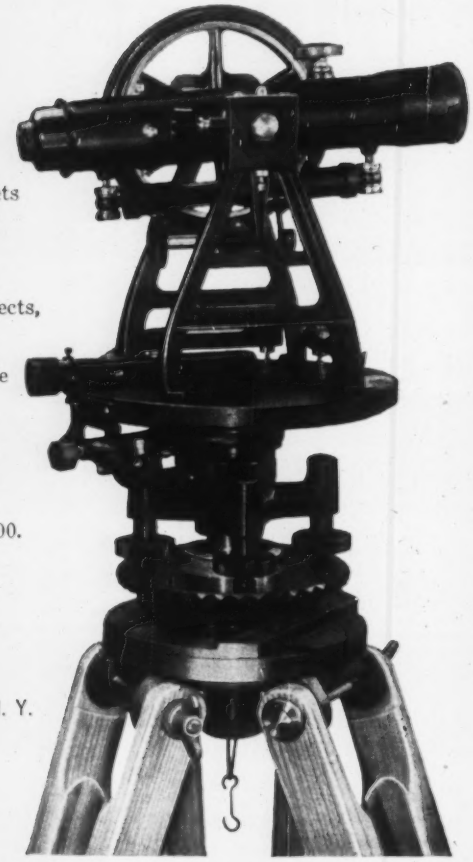


have you tried the GURLEY optical plummet transits?



Two Gurley transits now feature built-in Optical Plummets to eliminate plumb bobs ...save set-up time ...improve accuracy. The Optical Plummets will focus on distant objects, such as encountered in bridge or building construction—or as close as 12 inches for setting over a point. Built-in shifting head allows 2-inch shift over a point, giving ample leeway in initial set-up. Write for Bulletin OP-100.

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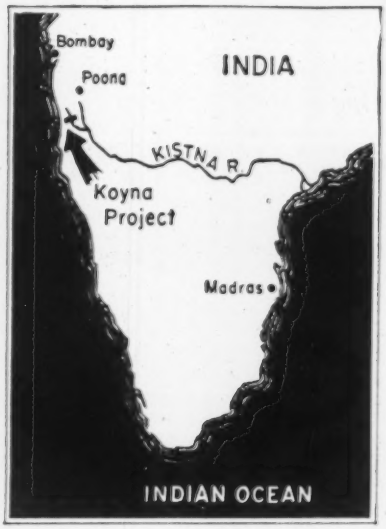


India Borrows $25 Million For Koyna Hydro Project

A $25-million loan has been granted by the World Bank to help finance first-stage construction of India's Koyna hydroelectric project.

Located on the Koyna River about 130 miles southeast of Bombay, the project will produce power mostly for the Bombay-Poona area. Initial capacity will be 240,000 kilowatts.

Work began on the job in 1956 (ENR July 5, 1956, p. 124). First-stage construction includes a 208-ft-high rubble-concrete dam, tunnel system, powerhouse and transmission facilities. In later stages, the dam will be raised and a second powerhouse added to provide water storage for irrigation and increase generating capacity to 570,000 kw.

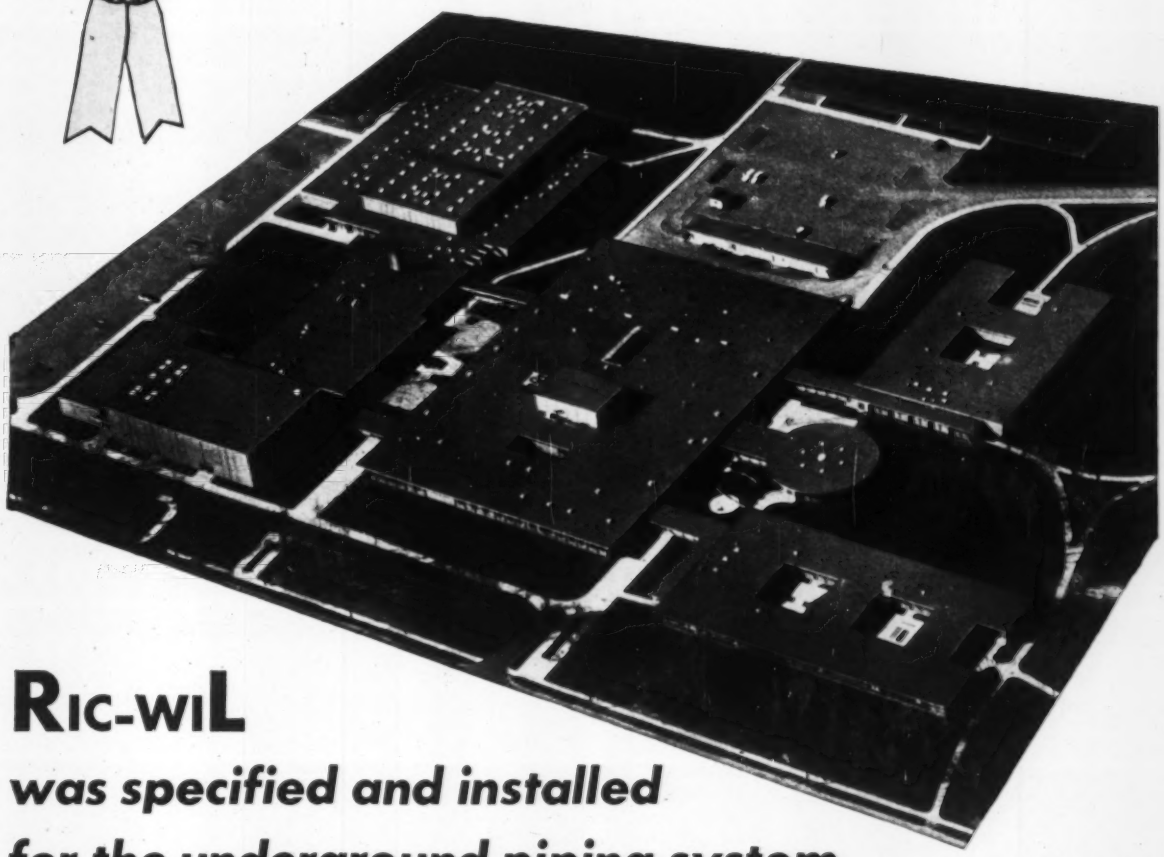
Water will reach the undergound powerhouse through a 12,000-ft concrete-lined tunnel, 17 to 21 ft in diameter, steel-lined pressure shafts and 72-in. steel penstocks. Generators will be driven by vertical-shaft impulse wheels with four jets each, operating under an average head of 1,560 ft. Tail water will discharge into a free-flow, concrete-lined tunnel, 7,500 ft long, leading to the Vasishti River.

Broad Program Scheduled For Rotterdam Meeting

Eight major subjects will be presented at the 1959 Congress of the International Council for Building Research and Documentation. It will be held at Rotterdam, The Netherlands from September 21 to 26. Several Russian engineers are expected to participate in the meetings.

The schedule is arranged to permit delegates to cover the entire Congress in general or a special field in detail.

at Award Winning Linton High School...



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Consulting Engineer: E. R. Gritschke
Contractor: Tougher Plumbing & Heating Co.

RIC-WIL is indeed proud to be a part of the Linton High School Project. All of the firms participating in the annual awards are to be congratulated and encouraged in promoting better design of educational buildings. For over 49 years RIC-WIL has supplied the distribution piping systems for educational buildings through the United States, Canada and many foreign countries. These piping systems have proved to be the finest in Thermal efficiency and mechanical strength. Complete information is available on the many types of systems. Write, wire or phone for literature.

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North Dakota chose concrete to get the big savings where they count most—on upkeep.

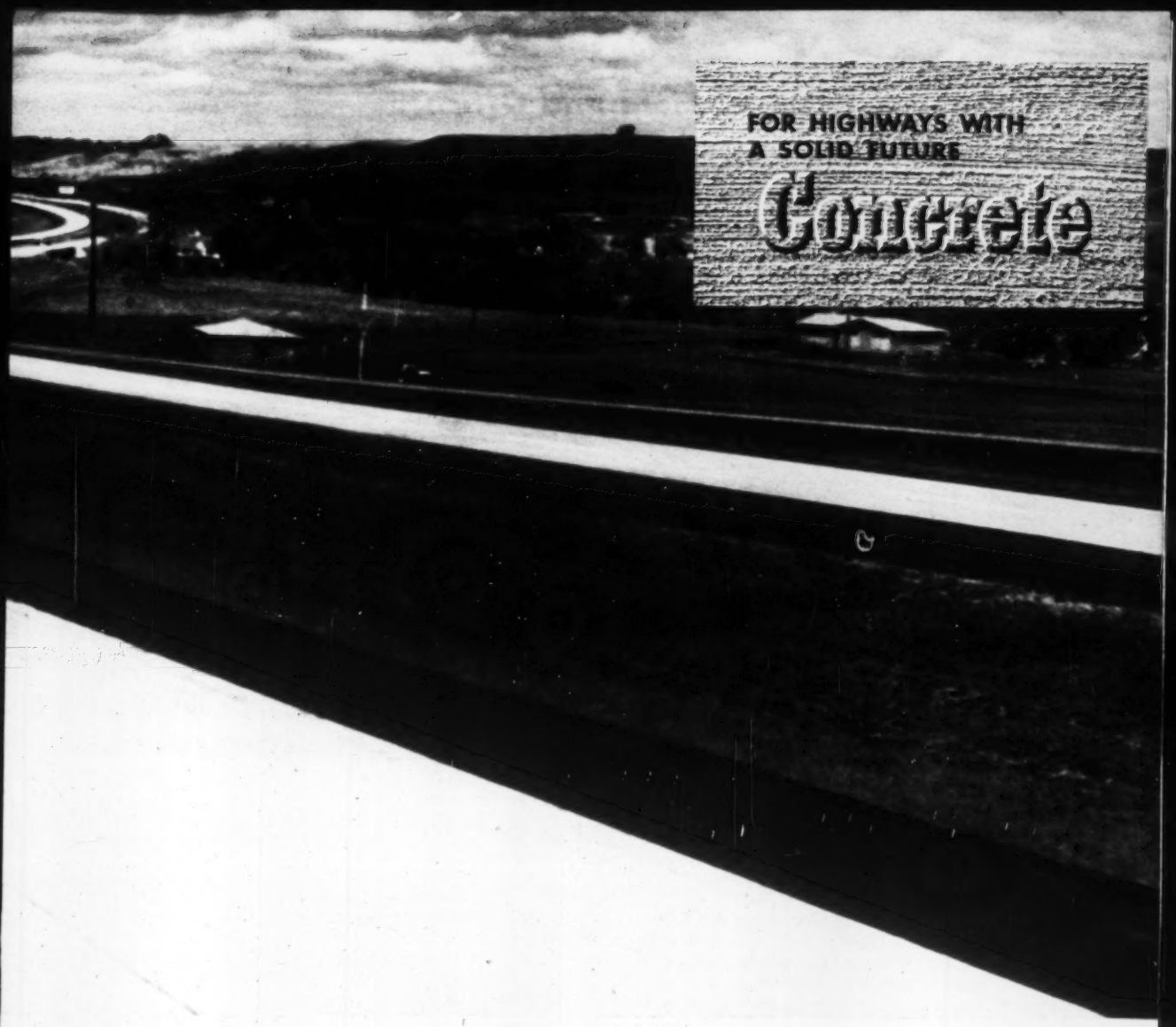
On the 39-mile stretch between Jamestown and Valley City—and for other sections of the Interstate System—North Dakota had good reasons for choosing concrete. *Concrete means tax savings and real dollar value.*

Concrete gives sizable year-after-year savings on upkeep. These savings pay back the investment in concrete's quality. *Concrete will save $72,200 per mile over 35 years.*

The reasons are simple enough! Concrete needs no special seal coatings, no periodic resurfacings—both costly items. There's far less routine maintenance, too. Concrete is nonflexible . . . it has *beam* strength it never loses. In fact, concrete grows stronger year by year. Modern air-entrained concrete gives built-in protection against damage caused by freezing and thawing.

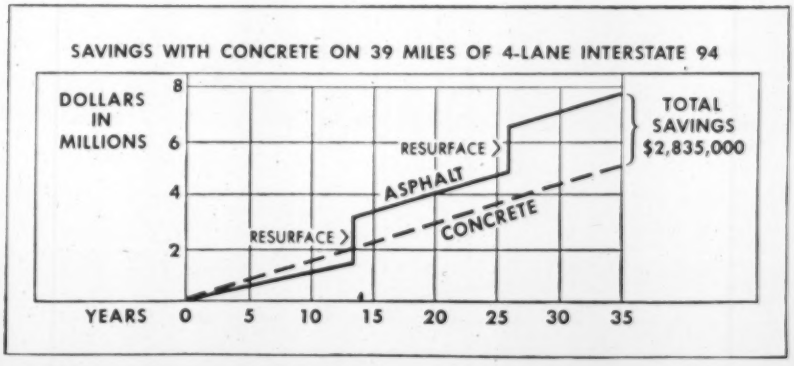
Concrete highways 35 years old are a matter of record. Today's modern concrete promises 50 years and more of smooth going for drivers. Thrifty concrete on the Interstate System leaves more funds for other highways. Concrete means true economy for taxpayers, both today and in the future. It's easy to see why concrete is the preferred pavement for important highways everywhere.

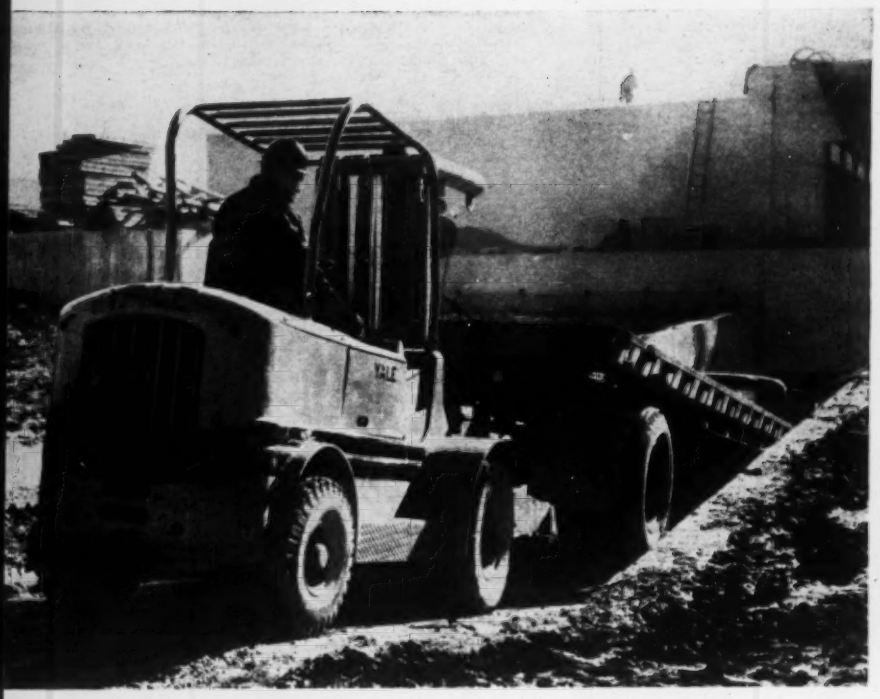
PORTLAND CEMENT ASSOCIATION *A national organization to improve and extend the uses of concrete*



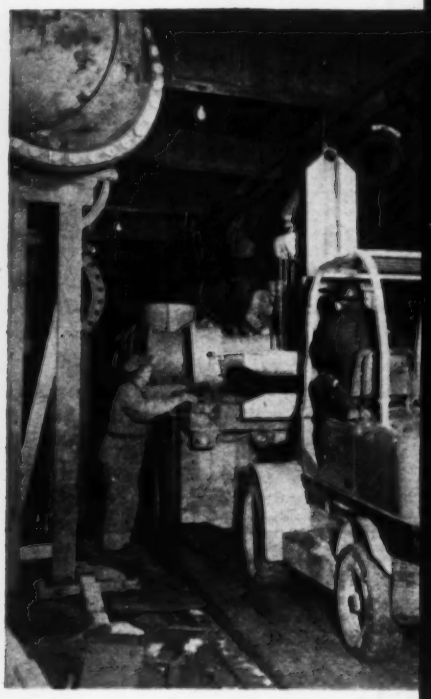
taxpayers $2,835,000 North Dakota's Interstate 94!

A graph of total costs (amortization of first cost plus surface maintenance) is shown for concrete and asphalt designs considered for first section of North Dakota's Interstate 94. Routine maintenance figures are based on averages from 28 reporting states. Asphalt resurfacing schedule is based on Bureau of Public Roads life expectancy studies.





Vehicles enter filter plant's pipe gallery through this access ramp . . .



unload materials at point of installatio

Cost Cutter: Make Pipe Gallery a

Construction costs were cut and future maintenance problems eased at Detroit's 200 mgd addition to its Springwells filter plant by providing vehicular access into and along the length of the plant's central pipe gallery. The new facility went into operation last month.

The central gallery of the 140-ft-wide building is 20 ft from wall to wall with a 10-ft clear lane for traffic. The gallery runs the length of the 445-ft-long building. It's 18 ft high between floor and ceiling beams. A ramp at one end leads into the gallery.

Handling costs of the pipe, fittings, valves and rate controllers was reduced by trucking the heavy material right to the point of installation. A fork lift truck followed the truck trailer into the gallery to unload equipment, then picked up and guided the rear end of the trailer as it backed out of the plant.

During installation, the same fork lift hoisted and held the pipe and fittings until they were finally bolted and secured in place.

When the plant is in operation, a pipe scaffold mounted on wheels will be able to move back and forth through the entire length of the gallery for maintenance access to all piping and valves. It is not necessary to set up and work from ladders.

The provision for the lane along the centerline of the gallery led to a looped, sectionalized layout for the wash water, surface-wash water, and high-pressure water supply lines. The looped lines in the pipe gallery permit isolation of half the filters for maintenance, and leave the central vehicular lane entirely clear beneath the heating and electrical service conduits near the ceiling.

Another saving was made by pairing the filter beds. The new filter building contains 40 rapid-sand filter beds, each 19 ft by 57 ft in plan. These filters are in addition to the 68 filters, each of comparable area, in the existing filter building. Since one filter out of service would represent such a small percentage reduction in the total capacity of the old and new plant combined, only one gullet and one set of branch piping and valves were provided for every two new filters. Each set of twin filters has nine control valves, instead of the 12 required for a pair of equivalent independent filters.

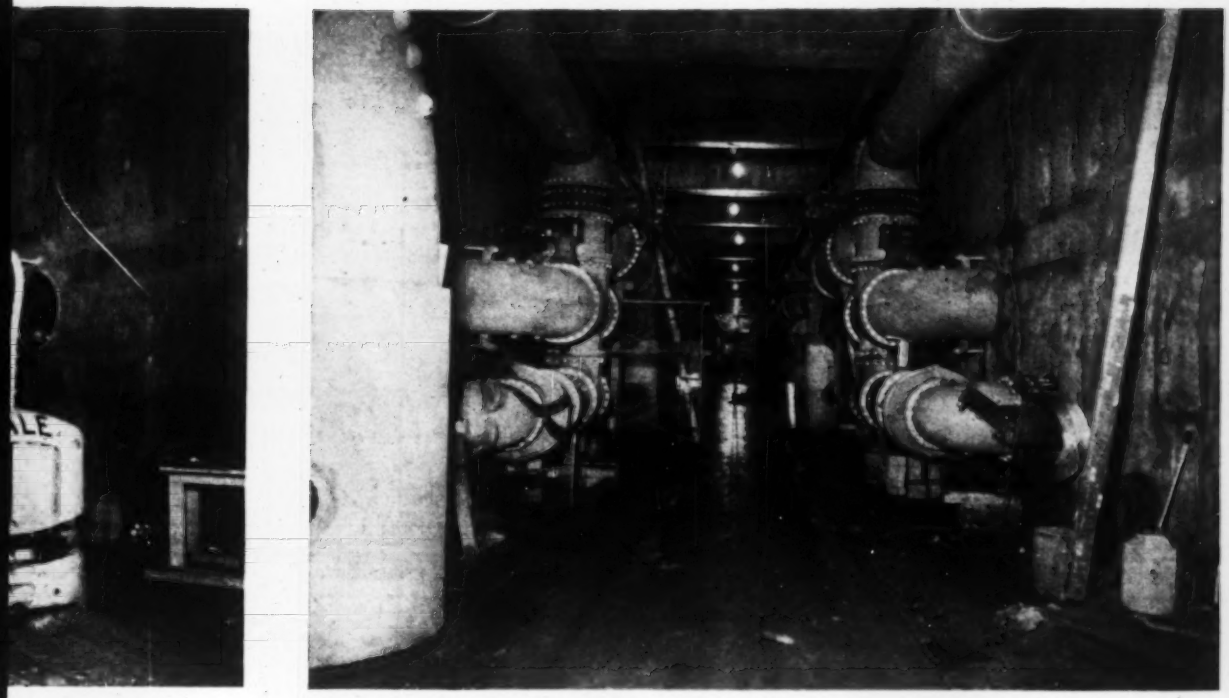
This type of saving extends similarly through the use of a single operating panel and a single rate controller for each set of twin filters. The 36-in. influent and drain valves that are used in operating each set of twin filters are attached to the inner faces of their respective end-walls.

The filter building is on low-bearing-capacity clay soil without piling. Differential movement may occur at the two expansion joints that cross the gallery, even though the unit bearing pressures of the building are small and quite uniform.

Except for a few flanged fittings and two Dresser couplings, the looped supply lines in the gallery are made with standard rubber-gasketed, mechanical-joint, cast iron pipe. This provides tolerance in the original installation and flexibility in the movement that may occur at the building joints.

The wash water supply loop consists of 24-in. pipe, and the other two loops

Author Vail H. Moore is a consulting engineer in Paxton, Ill. He was associated with Hazen and Sawyer of New York City, consultants for design and construction of the Detroit filter plant, during the course of the work.



Clear lane allows maintenance vehicles to travel the length of the plant.

Driveway

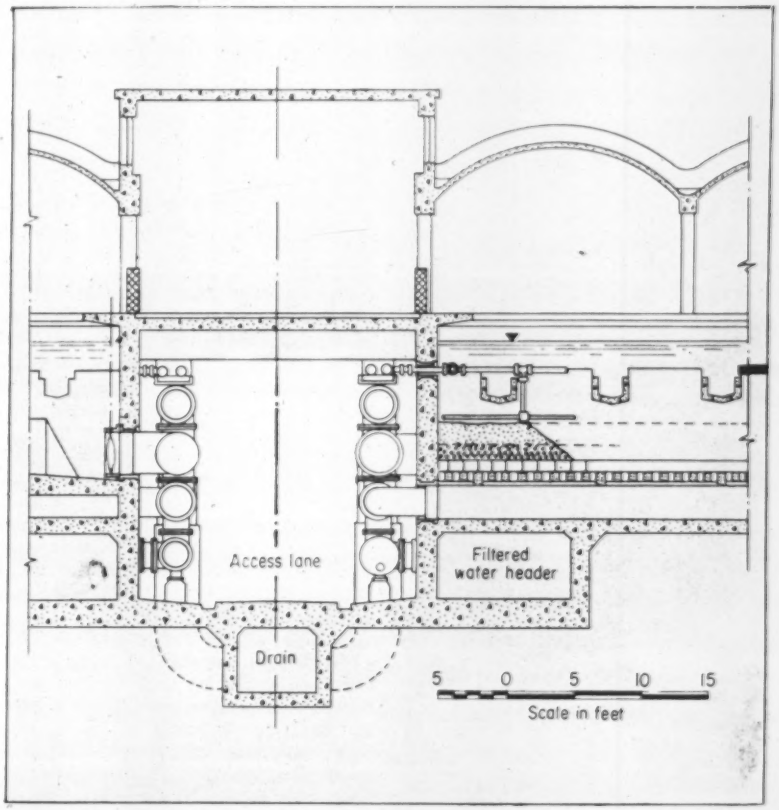
are made of 6-in. pipe. The portions of the filter waste drains that extend through and under the pipe gallery floor are made of 36-in. concrete pipe. They end at a 5x6-ft box drain under the center of the gallery.

The box conduit, integral with the gallery floor, serves as the gravity drain for disposal of waste wash water from both the new filter plant and the old filters. Disposal of waste wash water may be effected in several ways—by gravity flow, by pumping to the sewer system during periods of high water in the sewers, or by pumping back to the rapid-mix chambers for reuse of the water.

The two 5x10-ft filtered-water headers serving the new filters are located under the filter ends adjoining the gallery. Two settled water conduits serve the outer ends of the filters.

The original plant was completed in 1932. Construction of the additional facility was begun in 1956.

O. W. Burke Co., Detroit, was general contractor. George A. Bass Construction Co., Birmingham, Mich., was mechanical sub contractor. Hazen and Sawyer, New York City, was consulting engineer.



Box conduit under gallery floor disposes of waste wash water.

"The courage to stand up . . ."

"You build it; they'll use it."

Water Scout for Eight Million

"Name me one engineering project that's built too big."

That's a challenge that Stanley M. Dore, chief engineer of New York City's Board of Water Supply, likes to issue. He considers it a pretty solid reply to any suggestion that a Dore estimate of future demand might be overgenerous.

We rely too much on existing population trends and traffic patterns in planning a facility, he says. "You build it; they'll use it."

There may be those who would argue with Mr. Dore's point. But few would fail to agree that there is no place for underestimating in the spot he occupies. For his is the engineering responsibility in an agency charged with developing water supply for a growing city of eight million people.

Right now the main part of that job consists of finishing the $180-million third stage of the Delaware water system, which just passed a construction milestone with another "holing through" in the West Delaware Tunnel (see contents on p. 17).

• **Like a firm**—Stanley Dore heads the Board of Water Supply's Engineering Bureau, an engineering organization that functions somewhat like a big private consulting office. It comprises three departments—Design, Construction, and Research & Development. There are 480 full-time staff members.

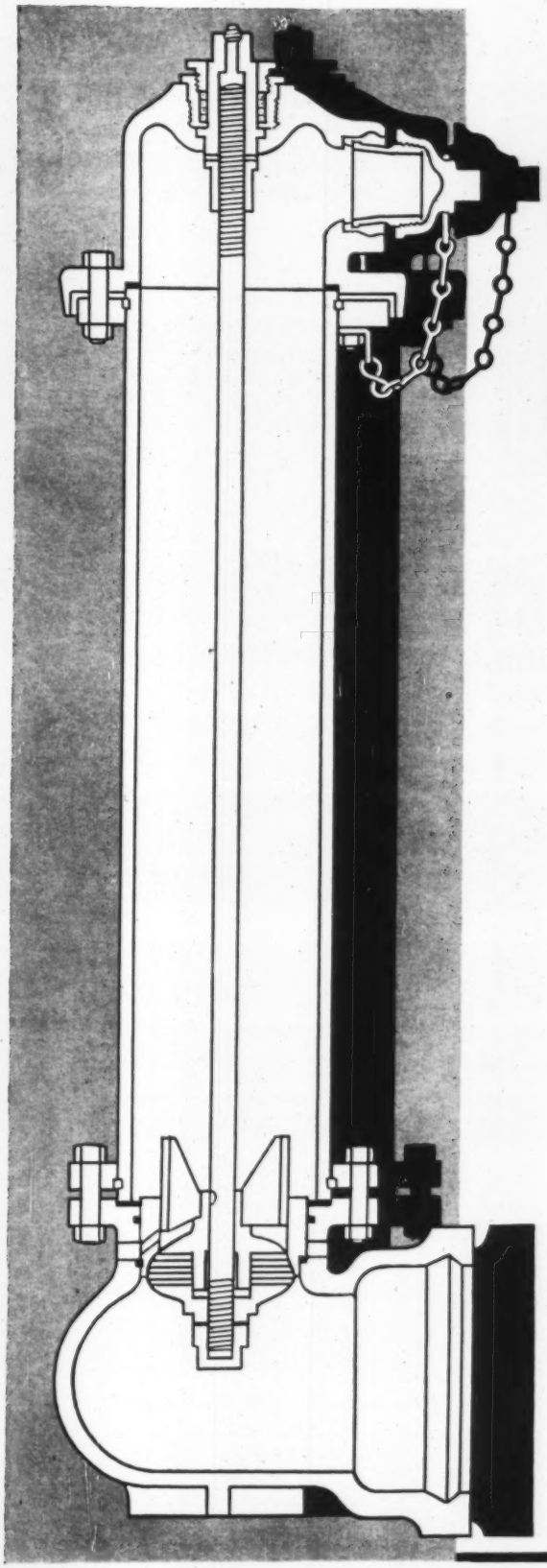
Mr. Dore advises the board on all engineering matters, and his staff designs and supervises construction of all board projects. He also has varying degrees of responsibility for projects incidental to the primary works. His staff designs relocated bridges and highways, for example, and then turns them over to state agencies that handle contract awards and construction supervision. The board also has to design and build sewage treatment plants—not for New York City, which has an agency responsible for city sewage plants, but for towns and hamlets in the watershed areas.

In addition to the bureau's permanent engineering staff, eight or ten regular consultants serve on a per-diem basis. And for highly unusual problems, the chief engineer may call in special consultants. The consultants function purely in an advisory capacity.

Top aides to the "chief," as some of Mr. Dore's associates call him, are deputy chief engineers heading the three departments of the bureau: George Spann, design; LeRoy Hammond, construction; and Eugene Farnan, R&D.

The "chief" himself reports directly to the Board of Water Supply, which consists of three lifetime commissioners. Arthur C. Ford, president of the board, is also an engineer; Edward C. Maguire and Herbert M. Rosenberg, the other two commissioners, are lawyers.

(*Continued p. 66*)



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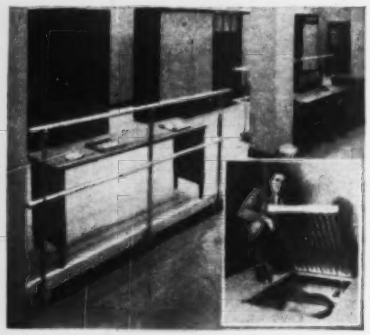

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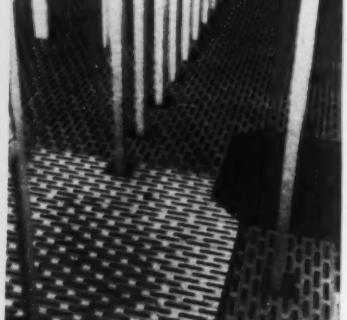
Wherever equipment for industrial processing, data handling and computing must be installed, specify Washington Aluminum raised flooring. Cut-outs can be made anywhere without weakening panels. Weight is supported as desired with deflection less than 1/360th of span. Panels easily lifted with simple suction device. Maintenance-free. Cabling, ducts beneath panels are easily accessible.



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Wherever safe footing is desired, here's the answer. Upset design provides non-skid traction in all directions even under wet or greasy conditions. Exclusive I-Beam design rivals structural strength of steel at a fraction of the weight. Can be fabricated to any length or width; for any weight load.

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• **Forty years in the water field**—Mr. Dore began piling up experience in the water and sanitary field 40 years ago, before he got out of college. Between his junior and senior years at Brown University, he worked a summer in a field office and as a rodman on a survey party for the Providence (R. I.) Water Supply Board. After getting his civil engineering degree, he tried a couple of jobs for a year and a half and then settled down in the Providence WSB's designing division. In 1928, with seven years of solid design experience behind him in dams, tunnels, purification works, aqueducts and reservoirs, he moved to the Metropolitan District Water Supply Commission of Boston, where he stayed for 22 years. He advanced to deputy chief engineer there.

• **Courage to stand up**—But in 1950, political shenanigans became too much for the three top engineers in the construction division. Mr. Dore, then deputy chief engineer, chief engineer Karl R. Kennison and designing engineer Lawrence M. Gentleman quit with a resounding blast at the MDC for padding the construction division payroll to pay off political debts. ENR editorially characterized the rebels as "three engineers who had the courage to stand up for honest, efficient public service."

From Boston Mr. Dore went to Pittsburgh and became deputy chief engineer of the Allegheny County Sanitary Authority. But in 1952, he answered a summons from his old boss, Karl Kennison, to go to New York City. Mr. Kennison had taken the post of chief engineer of the Board of Water Supply and wanted his former deputy to lend a hand. Four years later, when Mr. Kennison retired, Mr. Dore moved into the post.

• **A society engineer**—Stanley Dore is very active in professional organizations. He served a year as president of the New England Water Works Association. He is a past president of the Northeastern Section (New England) of the American Society of Civil Engineers and is now a director of the ASCE's Metropolitan Section (New York City area).

He almost became a national director of the ASCE one year, carrying the standard for some "rebels" who wanted a construction man. A group of water people nominated him for director in opposition to a candidate named by the regular nominating committee. He got 40% of the vote.

"They were voting not so much for me," he says modestly, "as against the society's system of nominating a single candidate in the back room."

Mr. Dore has had papers published by ASCE, New England Water Works Association and the Boston Society of Civil Engineers—among others. A 1956 paper on earth dams, won him a Gold Medal and a best-of-the-year citation from the Municipal Engineers of the City of New York.

• **Plummer and Dore on soils**—His writing is not restricted to society papers, however. In 1940, he co-authored, with Fred L. Plummer, a text and reference book titled, "Soil Mechanics and Foundations." The partnership was appropriate because it brought together sizable stores of material developed in many years of practical construction by Mr. Dore and years of teaching and consulting by Mr. Plummer. It filled a need too, author Dore points out. Soil mechanics was a much younger field in 1940, and the books you depend on today just didn't exist.

The volume has sold over 10,000 copies. Although it has never been revised (the publisher suggested it but it's just too much work, says Mr. Dore), it has been selling enough recently to bring in a royalty check this year.

• **After this job what?**—The bureau has three remaining major design projects to complete in the next year for the Delaware third stage: Cannonsville Dam, which will impound a reservoir on the West Branch of the Delaware River; and intake and outlet works for the West Delaware Tunnel, which runs 44 miles from Cannonsville Reservoir to existing Rondout Reservoir. The gain for the city, when construction of the third stage is completed in 1965, will be 360 million gallons a day.

Technically, the Board of Water Supply exists only for the particular job assigned to it at the moment. Once it completes a project and gets the new facility operating to its satisfaction, the city's Department of Water Supply, Gas & Electricity takes over. But the board has lasted since 1905 and is likely to last a lot longer.

Completion of the third stage of the Delaware system will take care of source development for New York City water till the year 2000. But the next big job appears to be shaping up now—a new supply tunnel under the harbor to Staten Island (Borough of Richmond). Least developed of that city's five boroughs, Staten Island is expected to boom as soon as the Narrows Bridge connecting it to Brooklyn is completed.

It is too early to plan on where New York City would go if it needed new water sources after the year 2000, Mr. Dore thinks. "Who knows what will happen by then?" But he sees the

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POZZOLITH is time-tested and proved. The hundreds of water and sewage works built with POZZOLITH concrete over the past 25 years are evidence that POZZOLITH concrete is superior in performance, in quality, and in economy to plain concrete and to concrete produced with any other admixture.

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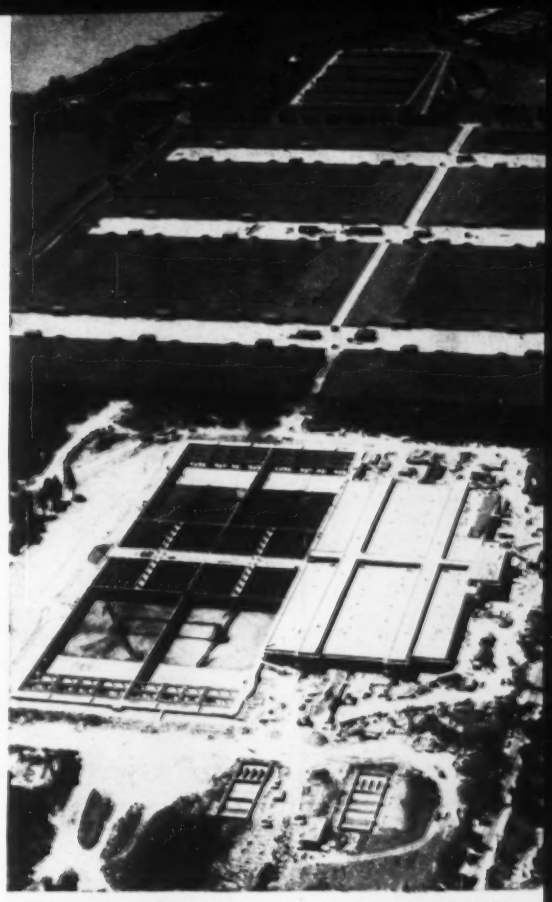
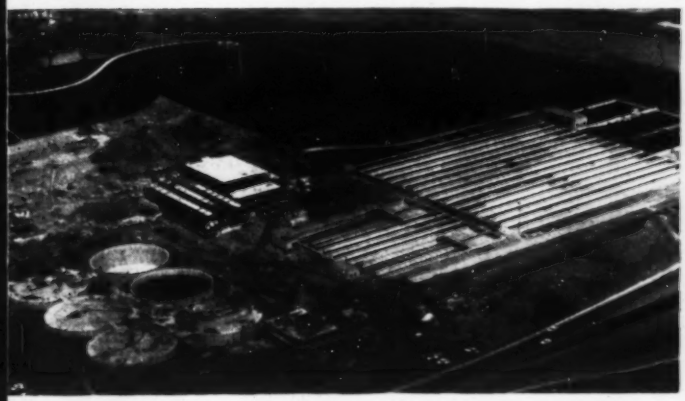
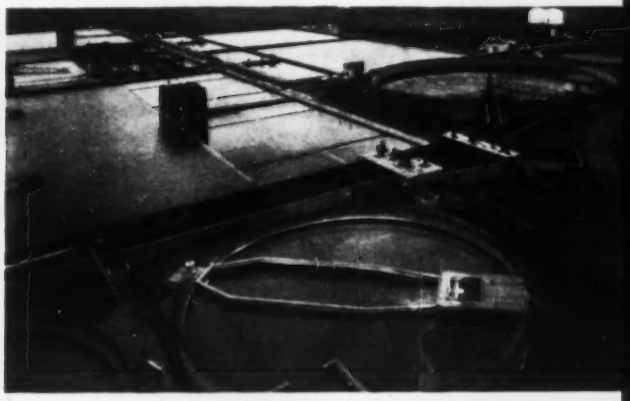


TORRESDALE FILTER PLANT—built under the supervision of the Philadelphia Water Dept., Comissioner & Chief Engineer, S. S. Baxter • Architect: Antrim & Etter, Philadelphia • Engineer: Morris Knowles, Inc., Pittsburgh • Contractors: McCloskey & Co. and Hughes-Foulkrod Co., Philadelphia • POZZOLITH Ready-Mixed Concrete: Liberty Corp. and The Warner Co., Philadelphia.



HUMBER SEWAGE DISPOSAL PLANT—Toronto, Ontario • Architect: D. E. Kertland, Toronto • Consulting Engineers: James F. MacLaren Association, Toronto • Associate Engineers: Alvord, Burdick and Howson, Chicago • Contractor: Pigott Construction Co., Inc., Toronto.



KANSAS CITY WATER SOFTENING PLANT—Kansas City, Missouri • Engineers: Burns & McDonnell Engineering Co. and Black & Veatch Engineering Co. • Construction: S. Patti Construction Co., all of Kansas City.

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Adirondacks as a likely source. But not just for New York City, he emphasizes. There could be a huge water district, with joint water development for Troy, Albany and other upstate areas, as well as for New York City. The beauty of Adirondacks development, he says, is that the operation could be entirely within New York State, a distinct legal simplification. East and West Branch Delaware development, he points out, though all in New York State, diverts waters that would otherwise feed an interstate stream, the Delaware. And development has so far required U. S Supreme Court action twice.

Careers

Business

Lawrence K. Murphy, recently retired as construction engineer and training co-ordinator of the Maine State Highway Commission, has joined the Asphalt Institute as district engineer for New England.

Milton C. Rote has been elected vice president of the Ralph M. Parsons Co., engineers and constructors of Los Angeles. He is manager of a construction division.

Maxwell M. Wachowiak has been appointed director of manufacturing of Minneapolis-Moline Co., of Hopkins, Minn. The company also named James A. Miller director of engineering.

Charles D. Allis has been promoted to vice president in charge of sales by McCulloch Corp., Los Angeles manufacturers of power chain saws.

Carl S. Petrasch, Jr., vice president of Ford, Bacon & Davis, Inc., New York City engineers and business consultants, has been elected a member of the board of directors of the company and of Ford, Bacon & Davis Construction Corp.

Norman W. Kempson has been named director of construction in this country and abroad by Johnson & Johnson, New Brunswick, N. J., makers of surgical dressings and allied products. The company now has more than 60 manufacturing plants.

Kent Attridge is Director of Welton Beckett, F.A.I.A., and Associates' newly expanded New York City office. He will supervise the firm's work on the Eastern seaboard and overseas.

Robert L. Nordlander, Richard R. Kelley and **Harland D. Luck** have formed a consulting engineering firm in Portland. They were formerly of Moffatt, Nichol & Taylor, Portland.

Marshall J. Rouse, A.I.A., **Milton Dublin,** P.E., and **August F. Ventura,** R.A., have opened an architectural and engineering office in New York City under the firm name of Rouse, Dublin & Ventura, Architects-Engineers.

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Give Thermoid-Quaker THUNDERBIRD Wire-Braid Hose the works . . . the roughest kind of impact, twisting, crushing, inside pressures. It'll take everything you can deal out, and then some.

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Sizes from 3/8" to 4" I.D. Working pressures to 400 psi air or 2,000 psi water. Lengths to 50 feet. Ask your Thermoid distributor about THUNDERBIRD, or write *Thermoid Division, H. K. Porter Company, Inc., Tacony & Comly Sts., Philadelphia 24, Pa.*

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BIGGEST DRILLING NEWS IN AGES...

V-R

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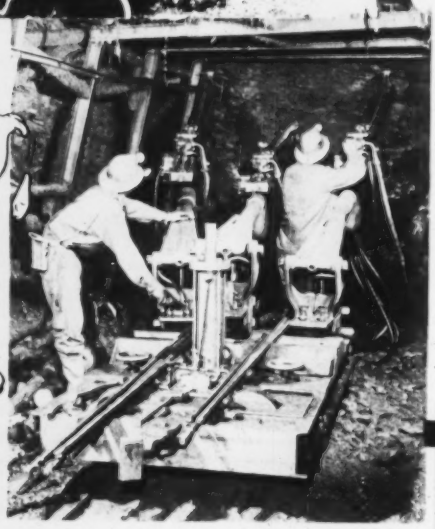

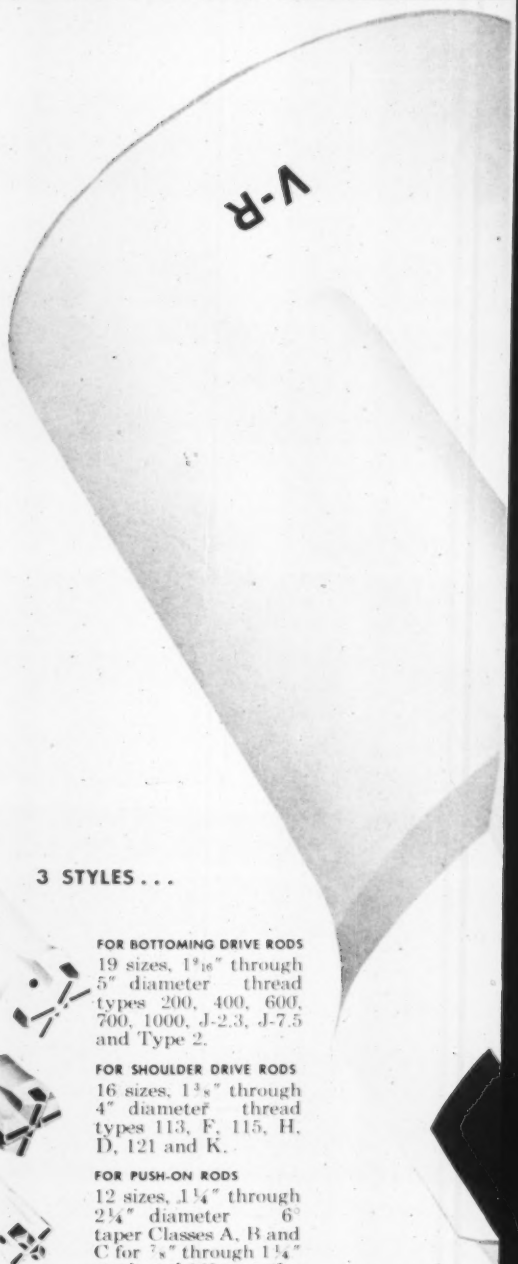

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19 sizes, $1^{9}/_{16}$" through 5" diameter thread types 200, 400, 600, 700, 1000, J-2.3, J-7.5 and Type 2.

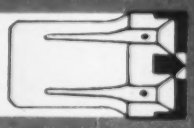
FOR SHOULDER DRIVE RODS

16 sizes, $1^{3}/_{8}$" through 4" diameter thread types 113, F, 115, H, D, 121 and K.

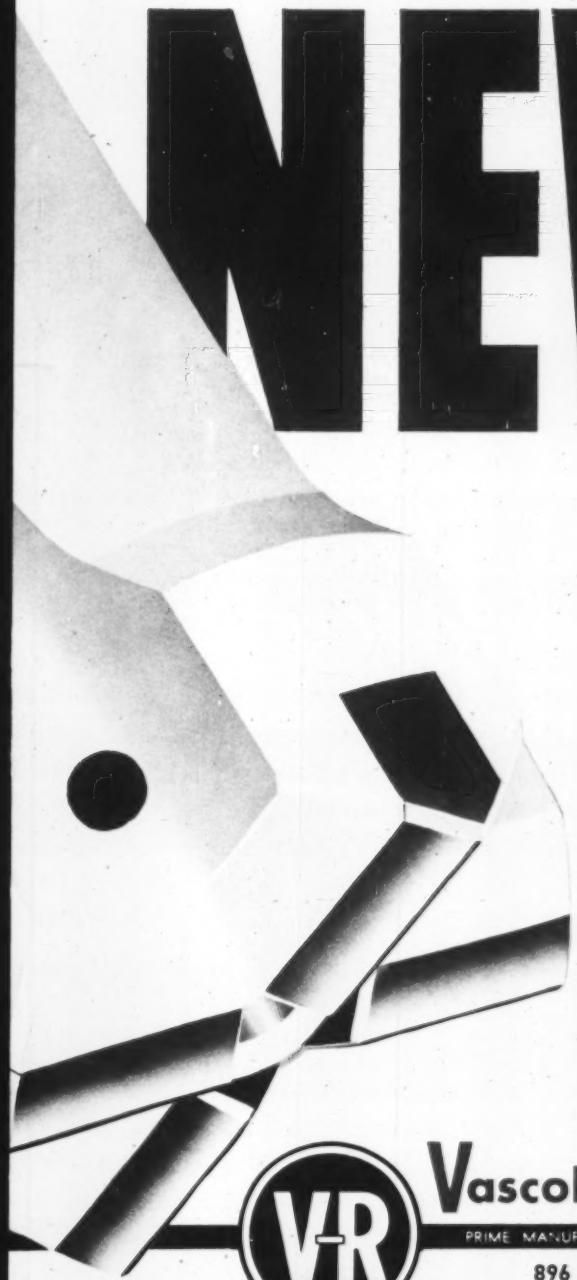
FOR PUSH-ON RODS

12 sizes, $1^{1}/_{4}$" through $2^{1}/_{4}$" diameter 6° taper Classes A, B and C for $^{7}/_{8}$" through $1^{1}/_{4}$" steels and 12° taper for $^{7}/_{8}$" steel.

R...HOLD GAUGE LONGER...



NEW ...CARBIDES ...BODIES ...ENGINEERING ...PRODUCTION TECHNIQUES



It's true . . . a new standard of drilling performance is now yours! The most exhaustive research and on-the-job testing program in drilling history has proved that new V-R percussion bits will give you faster penetration, longer life between grinds and hold gauge longer in any drilling situation.

All of the know-how of V-R's 29 years of carbide research and manufacturing experience has been combined with the knowledge of leading contractors and construction engineers to provide the ultimate in drilling performance.

Now these fast, rugged bits are ready to go to work for you. Contact your nearest V-R representative or write for complete information.

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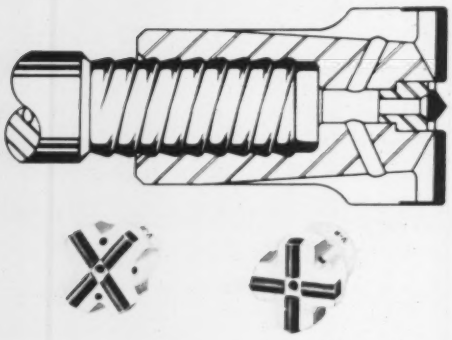
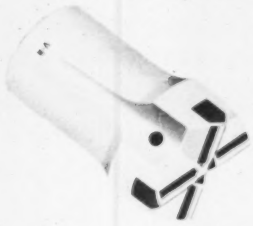
"Long-body" bottoming type bits

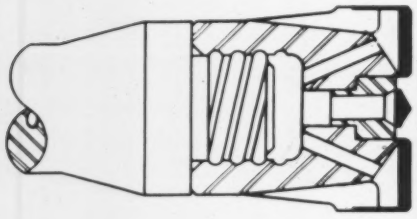


V-R's new bottoming type bits are setting the pace wherever there is tough drilling. Impact load is carried a shorter distance, giving greater penetration on every impact. Reduced load on the threads eliminates thread strippage. The long body design is specially engineered to distribute the load evenly, preventing ring-offs.



Extra clearance provided for faster drilling and easy extraction. 19 sizes $1\frac{9}{16}$" through 5" diameter — thread types 200, 400, 600, 700, 1000, J-2.3, J-7.5 and Type 2. All sizes available in the Cross Style and sizes $2\frac{1}{4}$" diameter and larger also available in the "X" Style.

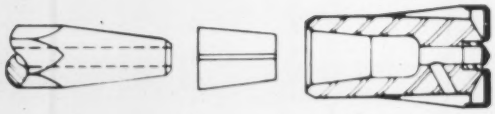
Shoulder type bits



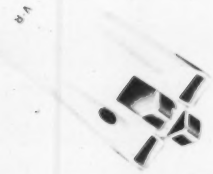
New V-R bits for shoulder drive rods feature exclusive V-R carbides and specially designed bodies. Threads are precision machined for perfect matched fit with rods. Thorough analysis and constant checking of special fatigue-resistant alloy steel assures greatest possible body strength to eliminate ring-off.

16 sizes $1\frac{3}{8}$" through 4" diameter — thread types 113, F, 115, H, D, 121 and K. All sizes available in the Cross Style and the K thread type is also available in the "X" Style.

Push-on type bits



V-R bits for push-on rods feature the same exclusive carbides and special alloy steel bodies as other V-R percussion bits. V-R shim provides snug fit and easy bit removal on either new or reconditioned tapered rods. 12 sizes $1\frac{1}{4}$" through $2\frac{1}{4}$" diameter — 6° taper Classes A, B and C for $\frac{7}{8}$" through $1\frac{1}{4}$" steels and 12° taper for $\frac{7}{8}$" steel.



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International

Turkey's Kemer Dam Completed

Notable during its construction period for its use of permanent, precast facing forms, Turkey's Kemer Dam project (ENR Oct. 10, 1957, p. 30) is now in full operation.

When the last of its three 23,000-kw generators went on line recently, the project became capable of providing the nation's rich cotton area around Izmir with enough additional power, irrigation water and flood protection to raise its production substantially.

Located on the Akcay River, a tributary of the Menderes, Kemer Dam is a gravity type structure, 360 ft high and 1,000 ft long. It was designed by the U.S. firm of Tippetts-Abbett-McCarthy-Stratton and built by the French company Entreprises Metropolitaines et Coloniales in association with the Turkish company, RAR Turk Limited Sosyetesi.

The precast concrete facing forms used followed a precedent set on two dams in France, La Girotte in the Alps and Bort on the Dordogne (ENR May 10, 1951, p. 28). Some 16,500 form blocks, each requiring 1.6 cu yd of concrete, were cast in a plant on the site. Placed by cableway, they were set to provide a stepped downstream face and vertical upstream face on the dam.

A second dam in this area, Demikopru on the Gediz River, designed and built by the same group of firms, is scheduled to be finished in November to increase further the economic potential of this fertile and historically famous region of Asiatic Turkey.

Alberta Starts Largest Road Job

Alberta, Canada, has opened contract negotiations for a $39.5-million highway construction project, the largest project of its kind in the province's history.

The appropriation includes $3 million for completion of the Alberta section of the Trans-Canada Highway and $4 million for reconstruction of the MacKenzie Highway.

The federal government of Canada will pay half the costs of these two road projects after they have been completed.

The program calls for completion of 300 miles of new subgrade, 300 miles of stabilized gravel base, 200 miles of asphalt surface, 500 miles of gravelling and 200 miles of asphalt seal.

Some 200 miles of double-surface treatment for secondary roads will be made.

Two major projects will be the continuation of a divided four-lane highway south of Nisku and the completion of the blacktop between Edmonton and the British Columbia border.

(*International continued p. 74*)

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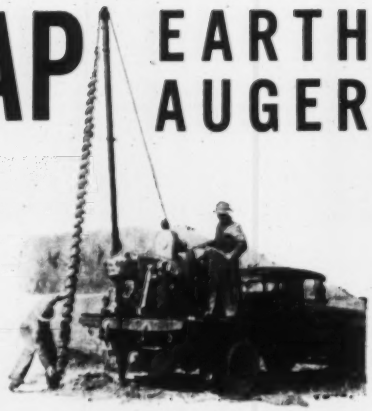

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The greatest traffic jam in British Columbia's history occurred at the opening of the $23-million Deas Island Tunnel under the Fraser River.

The tunnel was operated on a toll-free basis for the first two days as part of the inaugural celebrations. The four-lane tunnel has a capacity of 7,000 cars per hour. But highway traffic was stalled almost back to Vancouver in the north and for five miles to the south. More than 133,000 vehicles passed through the tunnel during the 41 hours it was operated toll-free.

Deas Island Tunnel is part of the Fraser-Delta Thruway, a link in the new highway system between Vancouver and the U. S. A. six-lane highway between the tunnel and the U. S. border will be completed in mid-1960.

(*International continued p. 76*)

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A multitude of suppliers, each with a product for your project, means endless conference hours coordinating equipment designs, delivery schedules, erection services. It means many extra phone calls, telegrams, voluminous correspondence!

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Cold Brittleness Test ..... —50°F ASTM D746 —55T
Chemically resistant to chlorinated water, salt water, acids, alkalis, sewage wastes, oil, etc.

SEALTIGHT PVC Waterstops are extruded from a special PVC compound with added plasticizer and stabilizer to provide all of the necessary qualifications of a true waterstop. The exclusive cross-section design features a unique rib that has a vertical surface on the leading edge and a diagonal surface on the trailing edge to provide a tenacious grip to the concrete in which the waterstop is embedded . . . the special center bulb provides the ability for the waterstop to successfully handle tremendous pressures caused by concrete movements. SEALTIGHT PVC Waterstops are strong and flexible . . . on-the-job splicing may be accomplished quick and easy without special equipment. Ideal for installation in concrete structures of all types. SEALTIGHT PVC Waterstops offer the construction industry the top-quality product in its field at a competitive price . . . specify SEALTIGHT PVC Waterstops when you want a 100% watertight joint.

OTHER SEALTIGHT PRODUCTS

- "PREMOULDED MEMBRANE" . . . the industry's only TRUE VAPOR SEAL.
- "CORKTITE" impermeable Perimeter Insulation.
- "HYDROMAT" Asphalt Liners.
- Expansion Joints of all types.
- Joint Sealing Compounds.
- Tongue and Groove Centerstrip.
- Air Entraining Agents.
- Concrete Curing Compounds.

W. R. MEADOWS, INC.
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. . . *International*

French Firm Producing Bigger Banded Penstocks

Demands for larger diameter penstock pipe banded with prestressed hoops by the Ferrand process has led the manufacturer of this type pipe in Grenoble, France, Etablissements Bouchayer & Viallet, to install a new 18,000-ton press for its manufacture and testing.

The process consists in expanding the pipe under internal water pressure until the steel hoops, previously placed and evenly spaced around it, have been stretched to a permanent set.

The largest pipes previously made by this process are the 7.24-ft-dia penstocks of the Malgovert project in the French Alps. The new press is now making 8.5-ft penstocks for the Tavropos project in Greece, and will soon start on 11-ft-dia pipe for the Kurobe project in Japan and the Roselend project in France.

The Roselend penstock is said to establish a world record by providing the water and the head to turn out 675,000 hp at the turbines.

Natural Gas Feeder Line Will Serve Buenos Aires

The Argentine Gas Enterprise (Gas del Estado) has begun construction of a 47-mile, 24-in. natural gas feeder line network from Talar del Pacheco, in Buenos Aires province, to the city of Buenos Aires.

Talar del Pacheco is the end station of the 1,097-mile, 24-in. line between Buenos Aires consumer centers and the northern oil fields. This line will be completed early in 1960.

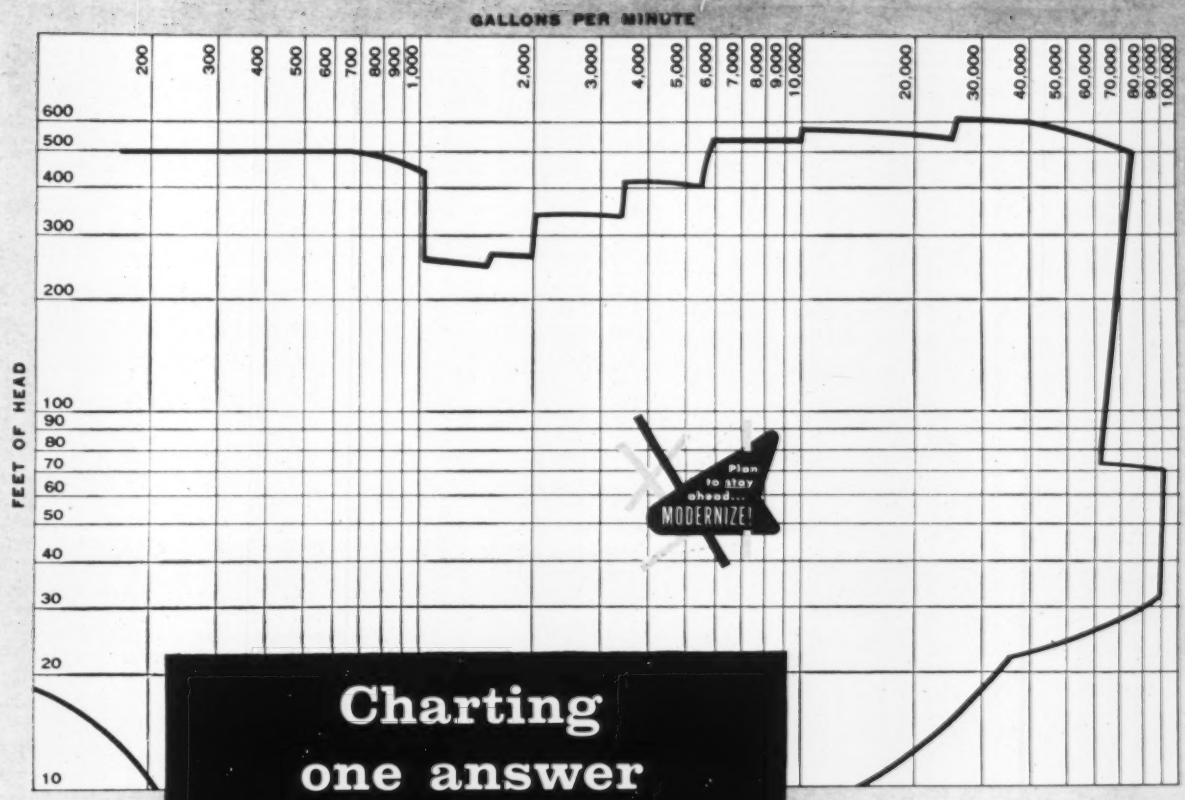
The line network will consist of two parallel 24-in. lines plus several trunk lines to supply communities surrounding Buenos Aires city. The official budget for the work is set at $4 million. Completion is scheduled for September.

Italian Firms Will Build Oil Terminal off Suez

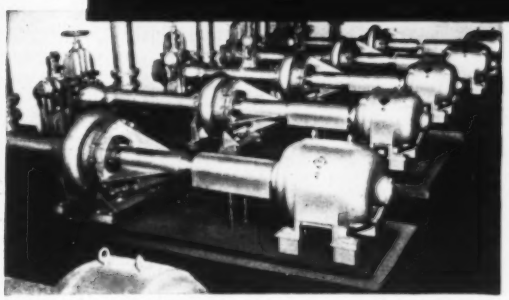
Two Italian firms have been awarded a $3-million contract to build an oil terminal and pipelines 2½ miles off the coast of Suez for the government of Egypt.

Damine, pipeline manufacturers, and Montubi, pipeline builders, will supply the equipment and construct an oil terminal capable of unloading simultaneously two 65,000 dwt supertankers.

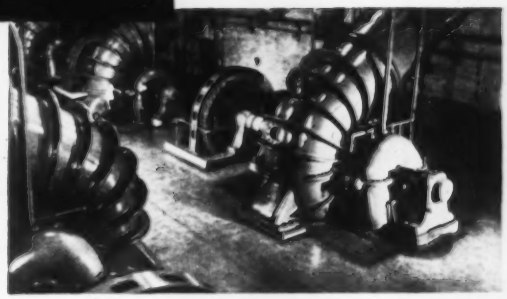
The contract also includes a seawater pipeline extending 985 ft into the sea. The pipeline will supply the cooling plants of the refiners.



Charting one answer for every pumping need



Auxiliary service is the job for six 10 x 8 A-C pumps. They are driven by Allis-Chalmers motors.



Main station application involves 12 A-C 72-inch Type SP pumps like that shown.

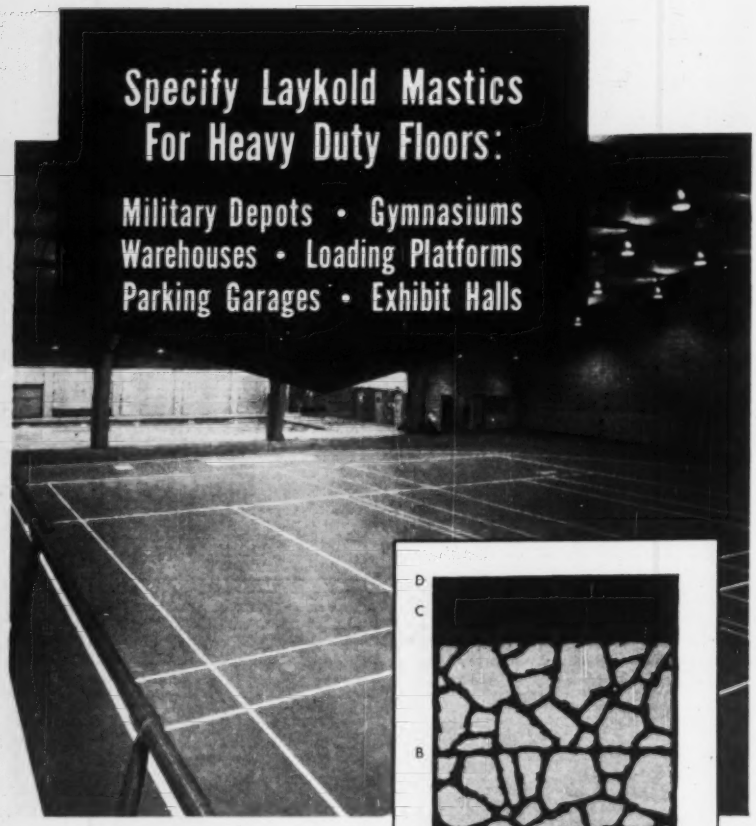
From the smallest auxiliaries to giant, main system pumps, the range chart for Allis-Chalmers pumping units covers practically every public works requirement. This outstanding one-source equipment availability is a good reason why A-C should be given "first call" in modernizing the pumping facilities of your municipal system.

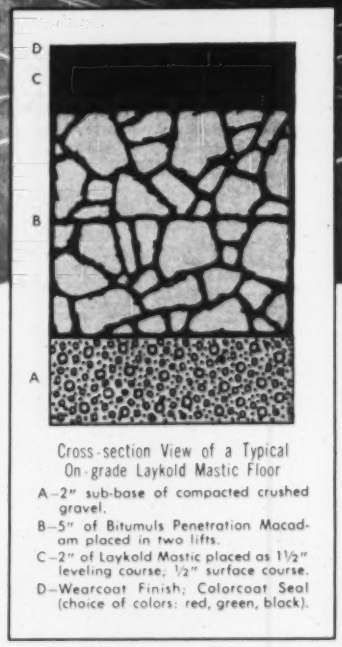
And complete line is only one "plus" for Allis-Chalmers. Teamed motors and control; customized standardization of parts and materials; engineering assistance and nationwide service are others.

Whatever your need in centrifugal pumps (and A-C builds units even beyond the chart shown), contact your representative or distributor. For additional information, write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

A-1023-PW


Specify Laykold Mastics
For Heavy Duty Floors:
Military Depots • Gymnasiums
Warehouses • Loading Platforms
Parking Garages • Exhibit Halls



Cross-section View of a Typical On-grade Laykold Mastic Floor

A–2" sub-base of compacted crushed gravel.
B–5" of Bitumuls Penetration Macadam placed in two lifts.
C–2" of Laykold Mastic placed as 1½" leveling course; ½" surface course.
D–Wearcoat Finish; Colorcoat Seal (choice of colors: red, green, black).

Heavy Duty Floor Mastics are made of Laykold Floor Mastic Binder, cement, sand, and stone chips. These are easily mixed and screeded into place; hard-trowelled to a dense, smooth surface; and cured to a hard, durable finish.

"Bonus Benefits" of Laykold Mastic Floors:

- No dust or spalling normally associated with concrete
- Resilient, warm, water-resistant, and easy on the feet
- Easy to maintain and repair

For on-grade construction Laykold Mastic Floors are often "built from the ground up". One recent example: the Field House floor specified and built for the Waukesha, Wisconsin, High School, shown above.

This floor, Bitumuls Penetration Macadam construction, has a Laykold Mastic surface, Wearcoat finish, and a "two-tone" Colorcoat seal (in green and red). They use it for a full program of athletics; plus auto, stock, and home shows.

Laykold Mastics are also used to surface concrete floors and as underlayments for floor tile.

There's a Laykold Mastic Floor to meet industrial, commercial or institutional needs. Call us for "typical specs".

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Perth Amboy, N. J. · Baltimore 3, Md. · Cincinnati 38, Ohio · Atlanta 8, Ga. · Mobile, Ala. · St. Louis 17, Mo. · Tucson, Ariz. · Portland 8, Ore. · Oakland 1, Calif. · Inglewood, Calif. · San Juan 23, P. R.

BITUMULS® Emulsified Asphalts • CHEVRON® Paving Asphalts • LAYKOLD® Asphalt Specialties • PETROLASTIC® Industrial Asphalts

Books

Preventive Law

LEGAL ASPECTS OF CONSTRUCTION—By Walter C. Sadler. 387 pages. McGraw-Hill Book Co., New York, Toronto, London. $8.50.

"Even as preventive medicine is a means toward health, so 'preventive law' can make America a happier place to live," says the author in the preface to this book. (He is professor of civil engineering at the University of Michigan and an attorney as well.) What is really needed in current construction literature, he contends, is a guide to human conduct that will assist construction to be performed more smoothly. He has written this book to fill the need.

The text analyzes the contracting business and, as it proceeds, points out the possibilities for misunderstanding or disagreements. Numerous court decisions and conditions leading to them are explained to help the reader avoid similar conflicts.

The book is divided into three parts. The first deals with situations arising from the nature of the contracting business—mechanic's liens, insurance, union contracts, workmen's compensation and arbitration. The second covers construction liabilities of owner, architect, engineer and contractor. And the third takes up problems connected with boundary rights, foundations, injunction and mandamus.

This book may not eliminate your need for a lawyer, but a knowledge of its contents will help you avoid much unnecessary controversy and litigation.

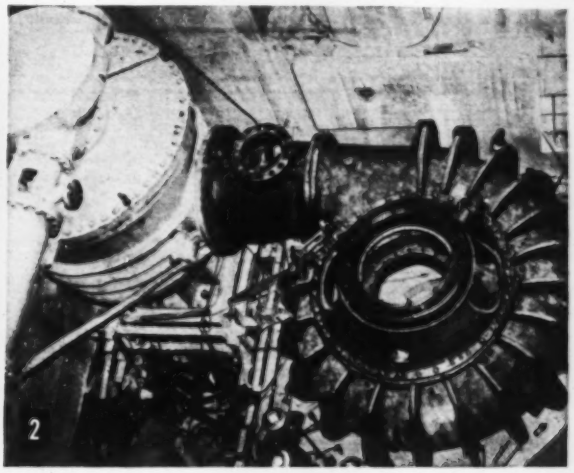
Geology for You

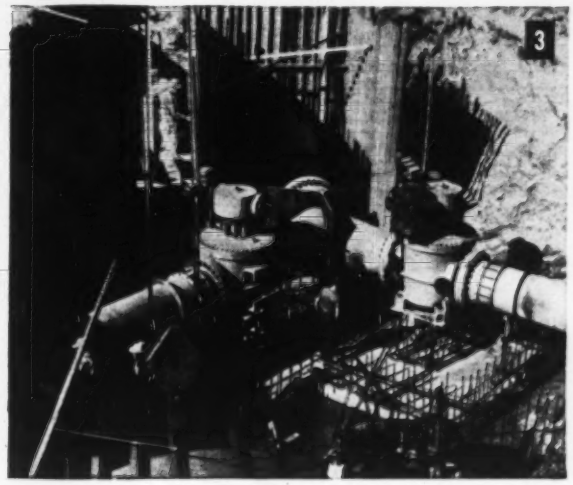
BASIC GEOLOGY FOR SCIENCE AND ENGINEERING—By Edward C. Dapples. 609 pages. John Wiley & Sons, Inc., New York, N. Y.; Chapman & Hall, Ltd., London. $9.50.

Certain aspects of geology are important in civil engineering. They are basic in such engineering subjects as soil mechanics and foundations, water supply and seismic design. They also play an important role in site selection. So it is good that another up-to-date treatment of geology that keeps engineering problems in mind is now available.

You won't find much in this book on dinosaurs. But there is an excellent treatment of the history and characteristics of soil materials and rocks. The book discusses streams, groundwater and shoreline processes. It also analyzes processes associated with glaciation and crustal deformation.

(*Books continued p. 80*)





1 Downhill view from Iron Mountain tunnel inlet on the Colorado River aqueduct shows the first two conduits and pumping station, with the reservoir and aqueduct in the background. Excavation at the right now houses a third set of pumps, and a third conduit has been added. Nine A-C Rotovalves are used here for pump discharge service.

2 Construction view shows 48" x 64½" tapered Rotovalve being installed with an Allis-Chalmers centrifugal pump at Iron Mountain Station.

3 Two 36" A-C Rotovalves connect to an energy dissipator on the Middle Feeder Line Discharge to the Alhambra Wash for ground water replenishment.

112 ALLIS-CHALMERS ROTOVALVES INSTALLED BY THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

A total of 563 Allis-Chalmers Rotovalves, in sizes from 6" to 64½", have been installed on water service throughout California in the last 25 years. The Metropolitan Water District of Southern California itself uses 112 of these Rotovalves in its Colorado River aqueduct and distribution systems. This aqueduct is part of a long-range program for increasing the water supply for the 7,000,000 people of the area it serves.

The flexibility of A-C Rotovalves suits them to any type of operation, any method of control, or any sort of location. In pump discharge service, the inherent characteristic of a large reduction of flow area during the early part of the closing stroke makes them ideally suited to control surges in the event of emergency shutoff. Full-line port opening means least possible pressure loss, and valve operation is quick and easy.

Allis-Chalmers offers you a complete line of Rotovalves, ball and butterfly valves for any water service. For full information, contact your nearest A-C valve representative, or write Allis-Chalmers, Hydraulic Division, York, Penna.

Rotovalve is an Allis-Chalmers trade name.

Hydraulic Division — RESEARCH | DESIGN | HYDRODYNAMICS | ENGINEERING | FABRICATION

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San Francisco, July 12-17
Booths 67 to 69, 78 to 80

A-C ALLIS-CHALMERS

1105

"The Cleveland J-30 doubled my daily production on 100,000 feet of trench"

HOWARD ZACHARIAS OF WELLINGTON, OHIO, a drainage contractor for the last 18 years, has averaged 2,500 feet per day with his new Cleveland J-30, has done 3,500 feet in 7½ hours, compared to an average 1,000 feet per day with other makes he formerly used. He did 100,000 feet of tiling with his J-30 between January 5 and May 1, in spite of adverse weather more than half the time.

He gives special credit to the J-30's beautiful balance and low ground bearing pressure on its long full crawlers, its easy-rolling 1,000-hour-lubricated track, the big capacity of its independent-drive conveyor, and the "push-button" hydraulic conveyor shift, which he says is particularly useful on tie-ins.

ITS FEATURES TELL WHY

- **The world's finest trencher crawlers, 1,000-hour-lubricated, a tremendously long lived, trouble-free, easy-rolling track with big 16" x 3" hydraulic steering brakes.**
- **V conveyor provides constant elevating angle for faster, higher spoil discharge, with dual independent hydraulic drive and automatic hydraulic shifting.**
- **The finest, most practical tiling and gumbo equipment.**
- **Complete visibility and control of every operation at the operator's seat.**

The CLEVELAND TRENCHER Co.

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Good Everywhere ®

. . . Books

Plastic-Design Textbooks

PLASTIC DESIGN OF STEEL FRAMES—By Lynn S. Beedle. 406 pages. John Wiley & Sons, Inc., New York, N. Y. Chapman & Hall, Ltd., London. $13.

PLASTIC ANALYSIS OF STRUCTURES—By Philip G. Hodge, Jr. 364 pages. McGraw-Hill Book Co., New York, Toronto, London. $10.50.

These are pioneer textbooks on the new subject of plastic design. Both supply the extensive background material needed to enable engineers to utilize the theory to fullest advantage and to avoid misapplication. Either is a valuable supplement to the recently published American Institute of Steel Construction manual, "Plastic Design in Steel Construction" (ENR April 16, p. 122).

Lynn Beedle's book is the simpler of the two. It has a more practical approach. It explains how the ductility of structural steel permits continuous beams and frames to continue to carry more and more load, though the elastic limit may be exceeded at one or more points; then it develops the theory from assumption of an idealized stress-strain diagram to design formulas for beams and frames.

Professor Hodge's textbook is divided into two parts, the first of which encompasses the principles of plastic design of beams and frames covered in Professor Beedle's book. The second part deals with limit design of structures under combined stresses—beams, plates and shells. It also discusses impact loading of structures strained into the plastic range.

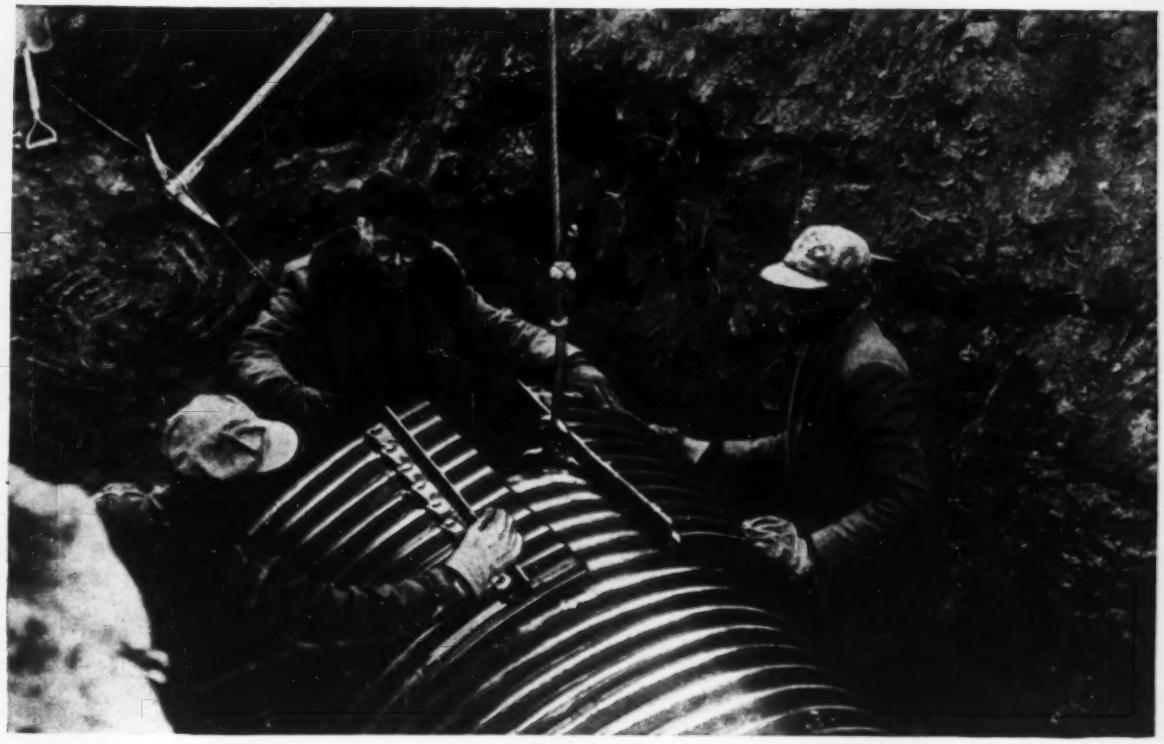
There undoubtedly will be many engineers who will find both books indispensable to a thorough understanding of this new subject.

Engineering as a Career

CAREERS AND OPPORTUNITIES IN ENGINEERING—By Philip Pollack. 140 pages. E. P. Dutton & Co., Inc., 300 Fourth Ave., New York 10, N. Y. $3.50.

Written for young persons interested in engineering, this book discusses the various branches of engineering, the actual work of engineers in these fields and the salaries and prospects for advancement. The personal traits and abilities needed for success in the various fields and educational requirements are described.

An appendix gives information on the professional engineering societies and provides the names and addresses of institutions in all parts of the country that are accredited by the Engineers Joint Council and offer courses leading to first degrees in engineering.



Even large-diameter lengths of Beth-Cu-Loy pipe are easily and quickly joined.

How to Join Lengths of Corrugated Galvanized Beth-Cu-Loy Pipe

One of the many advantages of pipe fabricated from galvanized Beth-Cu-Loy sheets is the simplicity of connecting the lengths. Here's all there is to it:

1. Slip a standard connecting band over the end of the first pipe section, with the band open to receive the second section.

2. Move the second section to within one inch of the first section, and tighten the bolts on the collar of the band. Be sure the corrugations of the band nest into those of each length of pipe.

3. Keep dirt and gravel out of the space between coupler and pipe. Draw up bolts or nuts uniformly, tapping the band with a mallet as the tightening proceeds.

4. With paved pipe, take care to align the paving of each pipe with its neighbor.

Drainage structures made of galvanized Beth-Cu-Loy sheets are strong, light in weight, flexible, and durable enough to last the life of the project. Bethlehem manufactures the Beth-Cu-Loy sheets to the rigid specs of the AASHO. Your fabricator will give you full details on Beth-Cu-Loy pipe; if you wish, we will send you the name of a fabricator near you. Just drop a line to our nearest office.

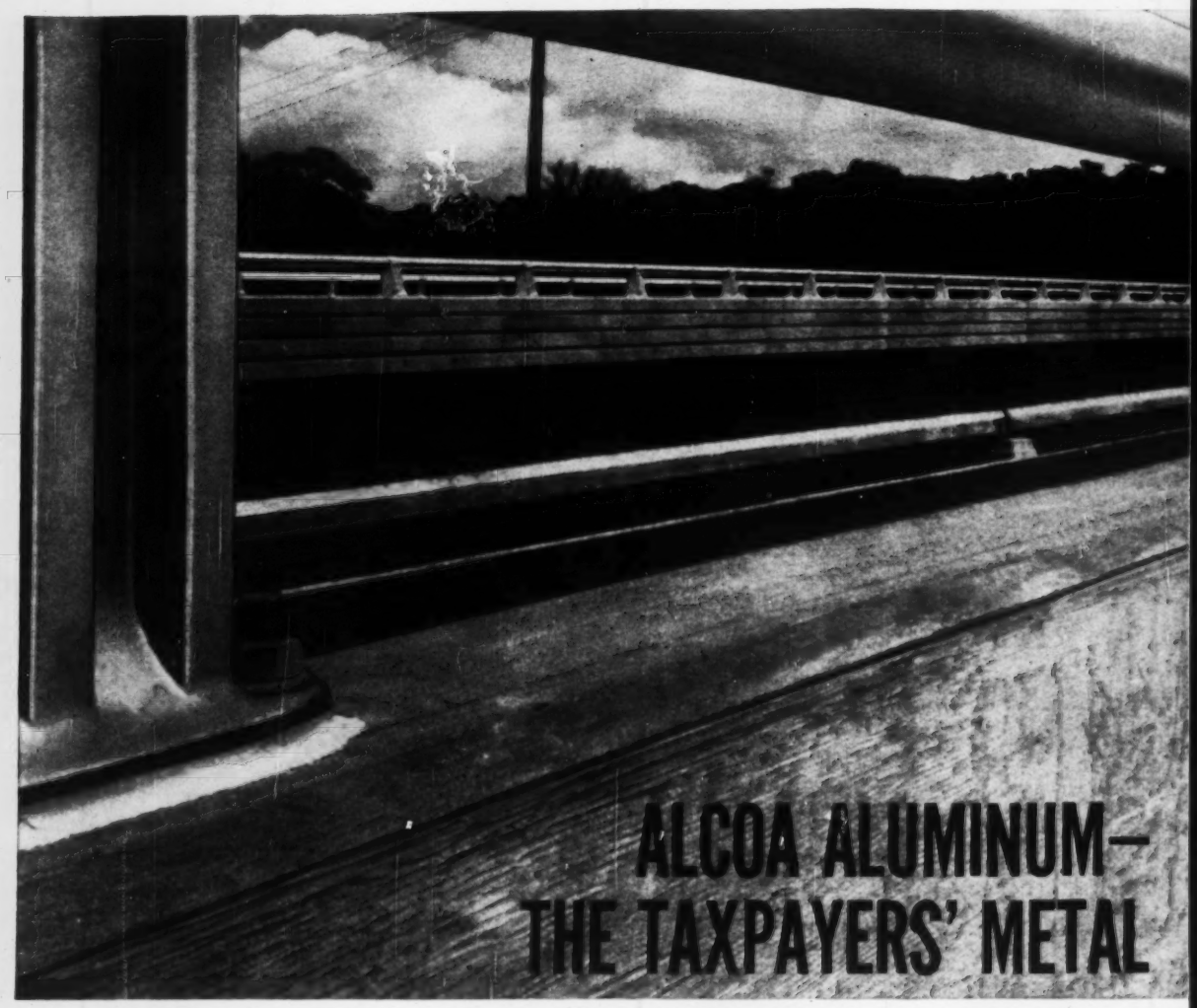
A crescent wrench and C-clamp are only tools required to secure connecting band to pipe sections.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



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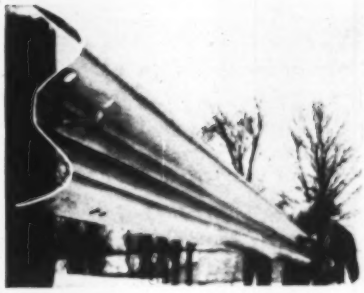
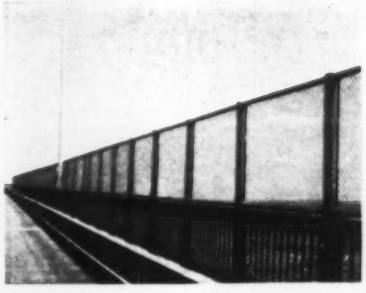
Alcoa® Aluminum is the taxpayers' metal. Light, strong and corrosion resistant, it makes highway dollars yield greater value in bridge railings, guard rail, lighting standards, fencing and highway signs. The reason is simple: first cost is last cost. Alcoa Aluminum's lightness assures faster, less expensive installation. Its defiance of moisture, road salts and corrosive fumes eliminates costly painting. Alcoa jobber-erectors and Alcoa's own technical experts can prove that you'll move more traffic at lower cost with highway products of Alcoa Aluminum. Your first step: write today to Aluminum Company of America, 1910-G Alcoa Building, Pittsburgh 19, Pennsylvania.



◀ **Alcoa Aluminum Beam Guard Rail** combines minimum upkeep with maximum protection. Impervious to the corrosive inroads of road salts, industrial fumes or air-borne grit, Alcoa Aluminum Beam Guard Rail never needs painting. An added safety factor is its increased energy-absorptive capacity gained from high-strength aluminum alloys. And Alcoa Aluminum Beam Guard Rail is available with aluminum posts, too, to round out the low-maintenance, high-safety story. Initial cost, only slightly higher than ordinary guard rail, is quickly saved.



◀ **Alcoa Aluminum Chain Link Fence** never needs painting. Here, again, first cost is last cost. Once Alcoa Aluminum Chain Link Fence is installed—on a highway as a divider strip or along a right of way, for instance—it never needs another penny's worth of maintenance. It is strong (minimum tensile strength: 54,000 psi), light and readily obtainable from Alcoa's nationwide network of jobber-erectors. It saves initial costs because installation is faster and easier, then keeps on saving money over the years because of its maintenance-free features.

▲ **Bridge Railings** of Alcoa Aluminum deliver maximum return for tax dollars, because first cost is last cost. It's a low first cost in the bargain, because lightweight aluminum is easier to handle and faster to erect. Corrosion-resistant Alcoa alloys never need maintenance; they end painting costs that commonly run to a dollar per lineal foot per year.

Your Guide to the Best in Aluminum Value

ALCOA ALUMINUM

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Safeguard your investment in costly originals with durable drafting films of Du Pont MYLAR®

Your valuable original drawings resist slow deterioration, tearing and rough handling when you use drafting film made of Du Pont "Mylar"* polyester film. That's because the base—"Mylar"—is tough and durable . . . won't dry out or become embrittled with age. "Mylar" is flexible, stable . . . resists absorption of moisture.

Drafting film of "Mylar" provides good contrast for microfilming . . . makes paper intermediates unnecessary. Because it costs less than many grades of tracing cloth, drafting film of "Mylar" provides you with many new cost saving opportunities.

So next time you order, ask for pencil and ink drafting films of "Mylar". . . *safeguard your investment* in drafting time and labor.

If you would like samples for testing, we will ask manufacturers of drafting film of "Mylar" to send you a sample. Write E. I. du Pont de Nemours & Co. (Inc.), Film Dept., Room EN-9, Wilmington 98, Delaware.

*"Mylar" is Du Pont's registered trademark for its brand of polyester film.

"Mylar" resists aging and deterioration . . . safeguards your investments.

"Mylar" resists absorption of moisture and liquids due to accidental spillage.

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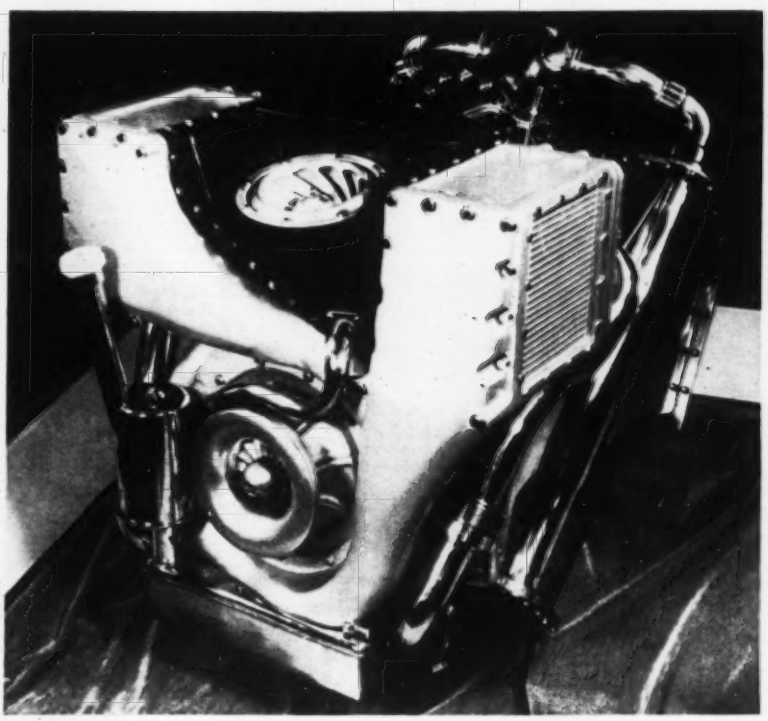


Gas Turbine Develops 300 hp

Ford has come up with a supercharged gas turbine engine that it calls "an important break-through in gas turbine design technology."

The 300-hp powerplant employs two stages of air compression instead of one. It also has dual burners.

The "704" weighs 650 lb installed. A diesel truck engine of comparable horsepower weighs about 2,700 lb. The compact engine is 38 in. long, 29 in. wide and 28 in. high.

Unleaded gasoline, kerosene, jet engine fuel or light diesel fuel can be used in the engine. No warm-up period is required, the company says.

Whereas earlier experimental gas turbine engines attain maximum fuel economy only when operating at full power, the 704 does so in a range of 25 to 100% of full power, the company states.

Exhaust gases are discharged at about the same temperature as conventional car exhausts, 740F.

Ford will start testing its engine in vehicles before the end of the year. FORD MOTOR CO., DEARBORN, MICH.

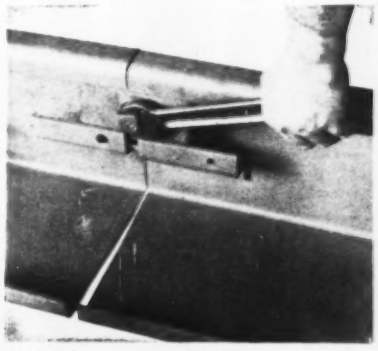
Cam Lock Makes Tight Joint

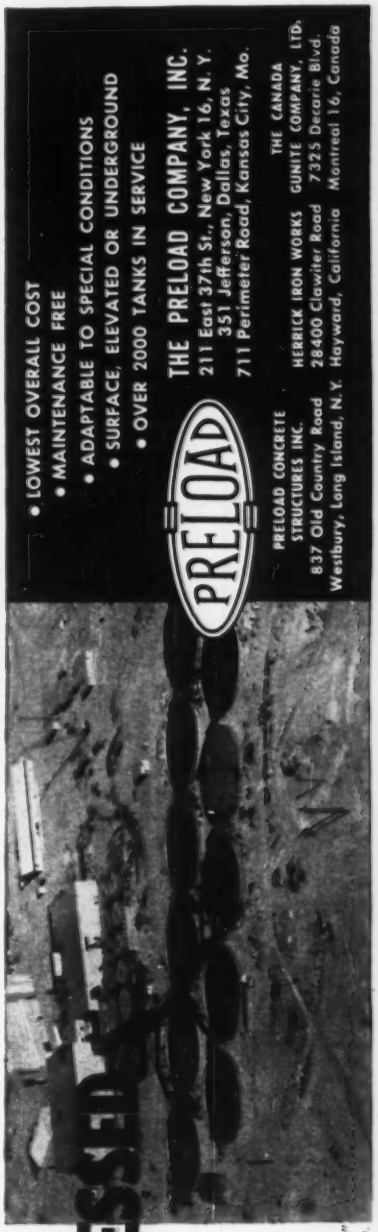
A quick quarter-turn of a cam-lock connection aligns sections of steel road form. The resulting joint won't shake loose under vertical stress or horizontal thrust, the manufacturer claims.

The "Cam-Lok" forms are made of ¼-in. alloy steel plate. Channel stake pockets are welded on.

The forms are available in single- or double-wedge types, with or without turned-up base flange. The 10-ft, single-duty form can be set to a 75-ft maximum radius. HELTZEL STEEL FORM & IRON CO., WARREN, OHIO.

(New Products continued p. 87)





Twin 1000-barrel Heltzel Cement Plants are partitioned into four compartments to handle up to four types of cement and fly ash. All compartments are loaded by a common elevator.

HELTZEL

twin two-stop manual plant gives ready-mix producer speed, flexibility

By teaming two standard Heltzel batching plants Marion Ready Mix, a leading Pittsburgh concrete supplier, is able to get the high speed production they require during rush periods. Utilizing dual two-stop drive-throughs, four trucks can be handled simultaneously, and different mixes can be batched at the same time by a single batch crew.

Aside from the production advantages Marion is able to handle both plants with a single material handling system. One belt conveyor services all eight compartments of the two 400-ton aggregate plants through an eight-position rotary spout. The four compartments of the two 1000-barrel cement plants are fed by a single elevator through an ingenious system of flop gates. All batchers are controlled from one platform.

The results: Marion charged 30 trucks with aggregate and cement in 35 minutes. A six-yard (19,000 lbs.) aggregate batch was cycled in 45-seconds and a six-yard cement batch in 55-seconds. This from standard manual controls.

If you're not now getting this kind of plant performance why not contact your Heltzel representative for the last word in modern batching technique.
Write today for complete information.

THE HELTZEL STEEL FORM AND IRON COMPANY
WARREN, OHIO

Batch-Type Asphalt Plant Handles 40 Tons per Hour

A 40-ton-per-hour, portable batch-type asphalt plant is contained in one unit for quick and easy travel.

It has truck-high loading of the finished mix, reciprocating plate feeders, dial-scale-controlled weigh hopper, a double-shafted 24-paddle 1,500-lb pug mill, included among the features.

Unit comes with or without a gradation section. CUTLER ENGINEERING CO., 5435 W. 63RD ST., CHICAGO, ILL.

Briefs . . .

• **"A" stands**—Free-swinging, double-faced traffic signs that hang from welded steel, enamel-finished frames are available. One model comes with locking legs and two flag holders. EASTERN METAL OF ELMIRA, INC., 130 HARRISON ST., ELMIRA HEIGHTS, N. Y.

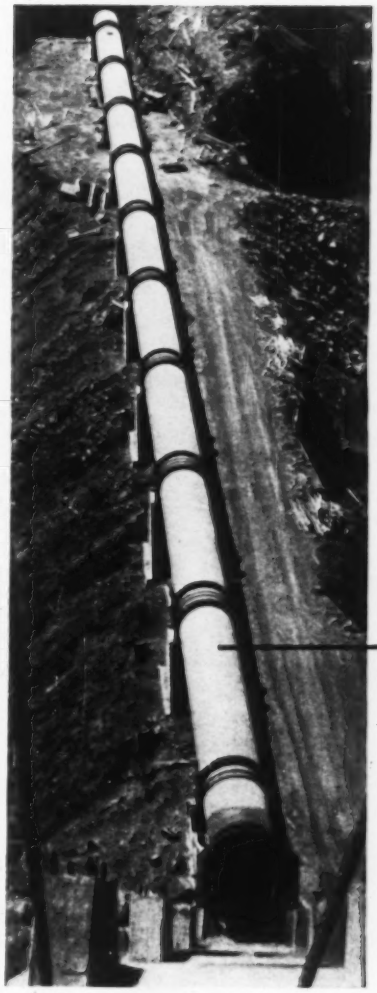
• **Semi dump trailers**—Double cap top rails, I-beam frames, front mount or underbody telescopic hoists, steel plate bodies and lugger nylon tires are featured in a line of semi dump trailers that come in lengths from 18 ft to 24 ft. Capacity range begins at 16 cu yd. JACOB PRESS' SONS, INC., 501 WEST 33RD ST., CHICAGO 16, ILL.

• **Truck crane**—A 2.2-ton crane designed for mounting on a truck between cab and bed has a lifting height of 21 ft and a swing angle of 270 deg. Two safety valves prevent overloading. Two hydraulic legs prevent tipping and stress on truck frame and springs. FOCOWIL CORP., 79 WEST MONROE ST., CHICAGO, ILL.

• **Dock leveler**—Mech-O-Dock ML-68 is a dock leveler that adjusts itself automatically. The unit is self-contained and has no exposed springs. It can support 10 tons of cross or roll over traffic load. WAYNE PUMP CO., GRIFFIN ST., FORT WAYNE, IND.

• **Clutch**—A 14-in. two-plate DPB direct pressure clutch for heavy diesel engines on on-highway vehicles has a facing area of 428 sq in. with a unit pressure up to 26.5 psi. Maximum release bearing load is 600 lb at full release. LIPE-ROLLWAY CORP., CLUTCH DIVISION, SYRACUSE, N. Y.

• **Variable speed transmission**—Constant horsepower transmission is said to be maintained through the use of a variable speed transmission designed around a combination TV-Belt. WESTERN MANUFACTURING CO., 3400 SCOTTEN AVE., DETROIT, MICH.



Each Dresser Coupling is engineered to meet the pressure at each portion of the penstock

CALIFORNIA-OREGON POWER COMPANY... another 100% Dresser-Coupled penstock

Near Yamsay, Oregon, you'll find another impressive argument for using steel-pipe penstocks and Dresser Couplings. The line is 100 percent Dresser-Coupled... the only type of joint which could be individually tailored to the pressure requirements at each portion of the penstock.

Up to 25% lighter

The Dresser method saves money by permitting the use of lighter wall, high tensile steel pipe. Weight savings can amount to 25 percent... resulting in lower freight and handling costs, lighter equipment on the job. There are no fussy lining-up operations. The flexibility of the Dresser Coupling compensates for slight misalignments caused by grade variations. With the Dresser method, you get a stress-free line, bottle-tight for life.

If you'd like to see technical data on a number of other Dresser-Coupled penstock installations, write for illustrated brochure. Before you draw up specifications, make sure you have all the facts on steel pipe joined with Dresser Couplings.

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"Traffic-go-round" Texas-style!

Reinforced CONCRETE

Four-Level Interchange at Fort Worth . . .

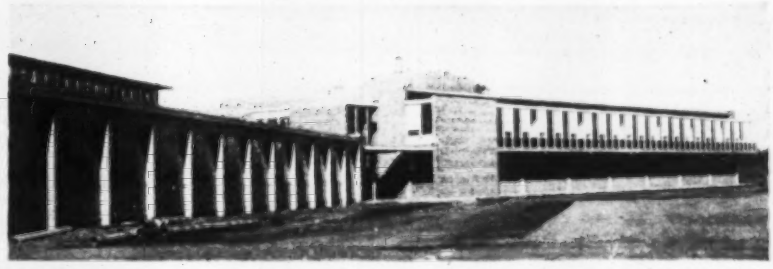
Just imagine designing this four-level interchange in a construction material other than reinforced concrete. Texas highway engineers found reinforced concrete the logical, economical solution. Here the design called for a direct-connect interchange in a restricted right-of-way. They chose the shallowest possible construction . . . continuous reinforced concrete slab. This provided guaranteed minimum over-all height with the required vertical clearance for the lower roadway levels. The design flexibility of reinforced concrete also simplified the forming problems for fitting curves and varying elevations with no complicated shop details. On your next bridge or multiple overpass, design for beauty plus economy . . . and stay on schedule with reinforced concrete.

CONCRETE REINFORCING STEEL INSTITUTE

38 South Dearborn Street, Chicago 3, Illinois

Designer: Bridge Section, Fort Worth District, Texas Highway Department
Contractors: Austin Bridge Company, Dallas, and Worth Construction Company, Fort Worth

Unit Prices



HIGH SCHOOL is designed with activity wing (left) and classroom wing (right), with second story overhang to provide bus loading area.

Ohio School Costs $968 per Pupil

The Shawnee High School in Springfield Township, Ohio, for 850 pupils at 34 teacher stations, went under contract at $822,939. This is a cost of $968 per pupil and $11.76 per sq ft. John L. Kline, Springfield, is the architect.

The use of precast concrete structural sections for columns, grade beams, floor beams and slabs for the second floor and roof, speeded erection of this 2-story fireproof building. The second story overhangs the first by 8 ft, to provide a covered bus loading area for 14 buses. Building area is 69,980 sq ft and the cube is 920,000 cu ft. This averages 89 cents a cu ft.

The school is designed as two functional-units, with an activity wing and a classroom wing. Facilities include: 15 regular classrooms; two commercial classrooms; an English classroom with stage; library; art, science and home art rooms; a combination study and cafeteria; kitchen with cold storage room; serving area with two counters; woodworking, metal working and printing shops; drafting room; combination gym-auditorium to seat 1,700; stage; locker and shower rooms; four offices and a board room; vault; two teacher lounges; work room; janitor closets; toilets; and rooms to house mechanical equipment.

Contractors are:

General
C. W. Fry Construction Co., Greenville, O.

Plumbing
Jamison Plumbing & Heating Co., Springfield, O.

Heating & Ventilating
Columbus Heating & Ventilating Co., Columbus, Ohio

Electrical work
Free Electric Co., Springfield, Ohio

Construction costs break down like this:

	Total Contract	% of Total	Average cost per sf	cf	pupil
Size and capacity			69,980	920,000	850
General contract, incl metal lockers, blacktop parking lot, grading & incinerator	$582,437	70 8	$8 32	$0 63	$685
Plumbing, incl sewage disposal system	69,028	8 4	0 99	0 08	81
Heating—warm air	91,454	11 1	1 31	0 10	108
Electrical work, incl conduit for intercom & program system	80,020	9 7	1 14	0 08	94
Totals	$822,939	100 0	$11 76	$0 89	$968

Construction commenced August, 1957. The building was completed in December, 1958.

Concrete Stands for Florida Stadium

Ft. Lauderdale, Fla. paid a $58,132 premium for concrete stands over the lower cost of steel stands, for its $356,089 Lockhart Stadium. William G. Crawford, Ft. Lauderdale, is the architect-engineer.

Contract at $337,925 for the structures, paving, field preparation and flood lighting went to Richardson Construction Co., Ft. Lauderdale, on a low bid 12% under the engineer's estimate.

A separate $18,164 award to Tropical Equipment Co., Pompano Beach, Fla., is for fencing the baseball and football fields.

Seating capacity of the stands is 8,000 seats, an average cost per seat of $16.39 for the stands, and $44.51 per seat for over-all stadium construction cost.

The following analysis breaks down the dollar and percentage cost:

Items	Amount	% of Total	$ sq ft
Area 325,000 sf			
N. field house transformer vault	$87,457	24 56	$0 27
General 57%			
Plumbing 21%			
Electrical work 22%			
S. field house, complete	20,216	5 68	0 06
General 56%			
Plumbing 39%			
Electrical work 5%			
Concrete stands	131,112	36 82	0 40
Asphalt paving	900	0 25	0 01
Football field prep	22,200	6 23	0 07
Baseball field prep	21,440	6 03	0 07
Floodlighting	54,600	15 33	0 17
Football field fence	10,976	3 09	0 03
Baseball field fence	7,188	2 01	0 02
Totals	$356,089	100 0	$1 10

Commence: 3-11-59 Complete: 8-8-59

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Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron and Steel Products: Last, June 11; Next, July 16
- Wood Products, Glass, Explosives, Chemicals: Last June 18; Next July 23
- Clay Products, Lime, Plaster, Paint, Roofing: Last June 25; Next July 30
- Wage Rates, Building Board, Lath, Insulation: Last, July 2; Next July 30

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.,* truckload del.,* per block		CONCRETE Ready Mixed 1:2:4 del. 80 cy & over
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	
Atlanta	$4.33a‡	$3.93a‡	$3.59a‡	$3.10a‡	$3.10a‡	$1.85‡a	$2.18a	$2.33a	$1.65r	$1.75r	$0.175a	$0.21a	$13.75g
Baltimore	4.32a	3.91a	3.46a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18a	.18a	13.50ow
Birmingham	4.23c	3.80cf	.....	2.53ns	2.53ns	2.13ns	2.75a	2.75a	1.65d	1.75d	.18	.18	14.60q
Boston	5.80ip	4.52ap	4.80imp	3.00qas	3.00qas	3.00qas	1.75qas	1.85qas	.....	.....	.23a	.275aa	15.00q
Chicago	4.13ag	3.87ag	3.90/3.95g	3.78‡e	3.78‡be	4.13‡be	3.95‡be	3.95‡be	2.25‡a	2.25‡a	.25‡a	.25‡be	13.50a
Cincinnati	4.68c	4.18c	4.18c	2.29‡cu	2.34‡cu	2.44‡cu	2.51‡cu	2.74‡cu	1.80u	1.80u	.20a	.25aa	13.25qr
Cleveland	1.30‡	.....	3.89‡ae	2.25ae	2.10ae	1.75ae	2.70fy	2.70fy	2.20‡fR	2.20‡fR	.....	.23f	16.50u
Dallas	3.75a	3.25a	3.63a	2.65‡a	2.75‡a	1.90‡	2.43	2.63	.....	.....	.....	.27	12.50g
Denver	4.79a	4.29a	4.79	1.95‡	2.15‡	1.42‡b	.....	3.00‡z	.....	.....	.25	.27ae	11.90
Detroit	4.25a	3.74aqg	3.72a	4.50‡abm	4.50‡abm	4.25‡abm	3.75‡abm	3.75‡abm	2.47aqas	2.47aqas	.22‡u	.25‡au	14.40w
Kansas City	4.23a	3.83a	4.10a	.....	.....	1.85‡a	2.00‡a	2.00‡a	.....	.....	.22a	.26c	14.50
Los Angeles‡‡	5.12ch	4.68ch	5.60c	2.56‡af	2.76‡af	2.41‡af	2.41‡af	2.46‡af	.....	.....	.19f	.303	12.46klz
Minneapolis	4.52a	4.11a	4.08a	2.70‡ae	2.70‡ae	1.60‡ae	3.95‡ae	3.95‡ae	.....	.....	.19q	.....	13.80f
Montreal	3.36‡det	3.11‡det	3.72‡det	1.90‡a†	2.15‡a†	2.40‡a	1.90‡†	2.15‡†	2.00†	2.00†	.20†	.28‡†	10.80ak†
New Orleans	4.06b	3.65b	3.85b	2.61b	2.61b	2.61b†	.....	.....	1.65d	1.75d	.275r	.27	14.00o
New York	4.66aR	4.25a	3.71aR	.....	3.20bkd	2.30bkd	2.85‡llb	3.10‡llbR	.....	.....	.265nwo	.32bwo	17.60ay
Philadelphia	4.57‡ae	4.16‡ae	3.76‡e	1.95‡aR	1.95‡aR	1.55‡aR	2.00‡aR	2.30‡aR	2.25‡a	2.25‡a	.....	.225	13.90z
Pittsburgh	5.65‡jk	4.62‡j	5.00‡jl	2.68‡aqs	2.68‡aqs	3.08‡aqs	2.00‡aqs	2.00‡aqs	2.10w	2.10w	.28r	.28r	15.80o
St. Louis‡‡	4.16/4.81a	3.76/4.11a	3.86/4.21a	3.45‡as	3.30‡as	2.40/3.40‡as	1.75‡s	1.75‡s	.....	.....	.255‡s	.315‡co	13.65/14.10q
San Francisco	4.34c	3.79c	4.75c	2.02	2.02	2.12	2.17	2.17	.....	.....	.24	.28cl	13.00ce
Seattle	4.22‡a	3.60ag	4.40a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm	.....	.....	.26a	.37ca	13.90‡
Toronto	4.00n	3.84d	4.00n	2.40	2.40	2.05	2.40	2.40	2.40	2.40	.26	.275cu	13.75q

‡ Delivered. * Prices incl. dealers discount except as noted. # Add 4% sales tax. ## Add 2% Intrastate sales tax. R Revised. † Plus 6% Mun & Prov tax.

CEMENT: •a Less 10¢ disc. 15 days. •b Less 2% disc. 15 days. •c Less 10¢ disc. 10 days. •d 10¢ disc. 20 days. •e Truckload lots. •f Fob mill, add $14.58 to $21.31 per car switching charges. •g fob mill + freight. •h LCL. •i Less 2% disc. 10 days. •j Truck lots, fob yard. •k 100 bag lots •l over 150 sacks. •m Sold in bags only. •n Less 5% disc. 30 days. •o Plus 50¢ for Sat. del. •p 5-8 ton truckload. •q F.o.b. mill.

SAND, GRAVEL, STONE & SLAG: •a Truck lots. •b Per cu. yd. •c 5 tons up. •d Less 5¢ disc. 10 days. •e Less 2% disc. 10th. •f Less 2% disc. 15th. •g Less 5% for cash. •h Less than 5 tons. •j F.o.b. quarry. •k Barge lots asd. •l F.o.b. scow Hudson river. •m Less 2% for cash. •n F.o.b. cars. •q F.o.b. yard. •r less 5% disc. 15th. •s Less 2% disc. 10 days. •t Less 10¢ disc. 10 days. •u Less 5¢ disc. 10 days. •v Less 2% disc. 15 days. •w Less 10¢ disc. 15 days. •x Incl. 35¢ switch. charge. •y F.o.b. dock. •z 5-8 tons. •aa Less 5% disc. 15 days. •bb Less 2% 25th of month

CONCRETE BLOCK: •a Cinder. •b Waylite. •c Haydite. •d Celocrete. •e 5¼ x 8 x 12 in. •f 8 x 4 x 16. •g F.o.b. truck at job. •l F.o.b. plant San Rafael. •m F.o.b. yard. •n 8 x 8 x 16. •o Less 2% disc. 10 days. •p Less 2% disc. 10th. •q Less 5% disc. 10th. •r Less 2% disc. 15 days. •s Less 2% disc. cash. •t Siporex, 7 x 8 x 16. •u Less 5% disc. 10 days. •v Less 12½% disc. 15th. •w Eff. 1/1/57.

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Kingsport, Tenn	3.45#	Hannibal, Mo	3.35#	Duluth, Minn	3.45#	Wyandotte, Mich	3.45#	Green Bay, Wis	3.50#
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Bath, Pa	3.50#	Waco, Tex. (+ 10¢ tax)	3.35#	Detroit, Mich	3.45#	Cleveland, O	3.50#	W. Winfield, Pa	3.60#
Lesley, Pa	3.50#	Giant, S. C	3.45#	Howes Cave, N. Y	3.50#	Alsen, N. Y	3.50#	Security, Md	3.50#

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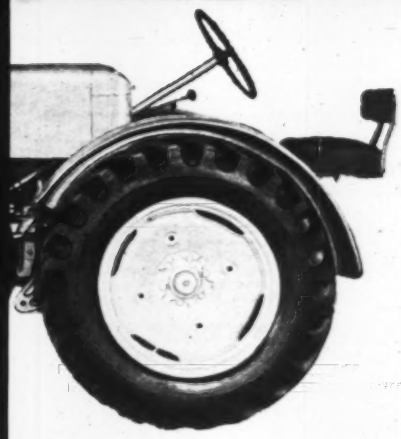
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	e	e	e	$28.60PS	$45.00PS	$0.2740PS	$0.2358	$0.1375nS	$0.245nS	$0.1325	$0.1325S	$0.2458
Baltimore	e	e	e	21.00t	.....	.09t	0.18t	.09nuE	18nuE	.095t	.10t	0.19t
Birmingham	.....	66.00t	.....	25.12	25.69O	.1069	0.1093O	.1162nc	1188Onc	.1006O	.1069	0.1093O
Boston	.....	.....	.....	22.00apS	46.00apS	22.00anS	46.00anS	.165anF	22anF	.14aOR	.15OR	.....
Chicago	150.00‡a	90.00‡ab	3.95/4.00‡aj	22.00b	32.00b	20.40bv	30.40bv	.10bvH	.18bvH	.08b	.....	.....
Cincinnati	.....	.....	.....	26.00SU	.....	26.00ff	.....	.1165nSU	.....	.109	.1265	.....
Cleveland	.....	89.50‡d	6.30	26.00tA	.....	26.00tvA	.....	.1115tvAF	.....	.....	.1180tA	.21A
Dallas	e	40/80p	e	26.82	46.20	.1138	.1983	30.45	52.40	.1100	.1138	.1983
Denver	.....	62.00a	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	116.00	.....	30.90R	.....	31.00vR	.....	13.42vIR	.....	.1000	.....	.28
Kansas City	e	e	e	18.00cl	.....	18.00cv	.....	.0825cvJ	.....	.079c	0.125c	.....
Los Angeles‡	e	e	e	21.50dmx	.....	21.50dvx	.....	23.00dKx	.....	22.00dnoo	23.90‡Xy	26.30‡Xy
Minneapolis	.....	.....	3.73h	25.00	.....	26.00v	.....	10.115v	.....	0.105	.1375bb	.....
Montreal	e	e	e	30.50n	43.60n	167n	.211n	17.80nuE	22.20nuE	.155n	.242n	.27nX
New Orleans	e	e	e	20.00e	.....	20.00ev	.....	.095evz	.....	.085eB	.095eBL	.1905eB
New York	.....	.....	3.70f	23.99mO	45.94mO	23.99vfO	45.94vfO	10.61uF	20.01uF	.....	10.68u	20.11u
Philadelphia	175/185	.....	.....	18/21U	.....	18/21U	.....	0.085‡ 10FU	.....	0.085‡ 10U	.....	.....
Pittsburgh	60.00k	95.00n	6.35n	31.20ux	.....	31.20uvx	.....	.1403‡S	.....	.14‡S	.1403‡	.....
St. Louis‡‡	.....	.....	.....	19.71f	.....	1825f	.....	0896f	092fvc	0.165f	1825O	30R
San Francisco	.....	70.00	.....	24.50gdd	41.50gdd	24.50gkndd	41.50gkndd	24.50gNdd	43.00gNdd	24.25gWdd	25.50gXdd	2063gXdd
Seattle	.....	.....	.....	25.00z	40.00k	25.50nzc	.....	26.50KE	.....	24.25hzY	23.50hzX	45.10hzX
Toronto	.....	135.50‡t	4.50f	41.50	61.28ee	0.2075	0.2773ee	0.222w	0.2704vee	0.233	0.218Zee	.273Zee

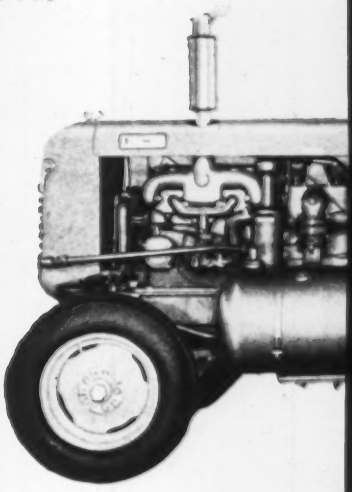
‡ Delivered. * Add 4% sales tax. ** Add 2% intrastate sales tax. R Revised.

PAVING BRICK & BLOCK: •a Less 2% disc. 10th. •b 3 x 3½ x 8. •c 2½ x 8½ x 4. •d Truckload lots. •e Not used. •f 2" interior 6 lb tr. •g Less $1/Mdisc. 15th. •h 2" tr, 8 lb. •j 3 x 3½ x 8½. •j 2½", 8 lb. tr. •k Used. •l Redshale. •m Pine, oak $6.57. •n Truck del. •o Less $1/M disc. 15 days. •p Used: $40; new: $80.

ASPHALTS: •a F.o.b. refinery, Everett, Mass. •b F.o.b. refinery, Lockport, Ill. •c F.o.b. Sugar Creek, Mo. •d F.o.b. refinery, El Segundo. •e F.o.b. Baton Rouge. •f F.o.b. Hartford, Ill. •g F.o.b. refinery, Richmond, Calif. •h F.o.b. Martinez. •j F.o.b. refinery, Baltimore. •j F.o.b. refinery, Inglewood, Calif. •k 50-110 'penetr. •l Less than 100 penetr. •m 40/300 penetr. •n F.o.b. refinery, Montreal. Fed. tax included; add 6% for mun. & prov. •o Drums not avail. Shipped in steel bbl. •p 80/70 penetr. •r In customer's drums. •s Shipped in drums, per drum. •t 150 300 penetr. •u Per 100 gal. •v Per ton. •w Per gal. •x Also tank trucks •y F.o.b. Oakland. •z F.o.b. Edmonds. •A F.o.b. refinery, Cleveland. •B F.o.b. Destrehan, La. •E RC. •F Also RC. •G Also MS •H RC 0-5 incl. •I MC 4. •J MC, RC $0.095. •K MC 3, 4, & 5. •L MS. •M MC 1-5, RC 1-5, $0.0918. •N MC 3. •O Truck-load. •P F.o.b. refinery, Atlanta. •Q F.o.b. Eldorado, Ark. •R Delivered within 50 mi. •S Less 2% disc. 10 days, net 30. •T Less 1% disc. 10 days. •U F.o.b. refinery. •V Less 2% disc. 15 days. •W SC 2. •X RS 1. •Y SC 1. •Z Incl. 10% Sales Tax. •aa SC 3, 4, & 5. •bb RS 3. •cc In used drums. •ddLess disc of $1 ton. ee 45 Imp. gal. drums •ff 60-150 penetration



from any angle...



It's a new, better Tractair!

Le Roi's self-propelled air-compressor has been redesigned to give you easier operation, easier serviceability

Le Roi's famous Tractair — the most popular self-propelled air compressor in the world — is now available in a new design! It's packed with convenience, features and maintenance-reducing innovations that will make Tractair an operator's dream — and a contractor's favorite.

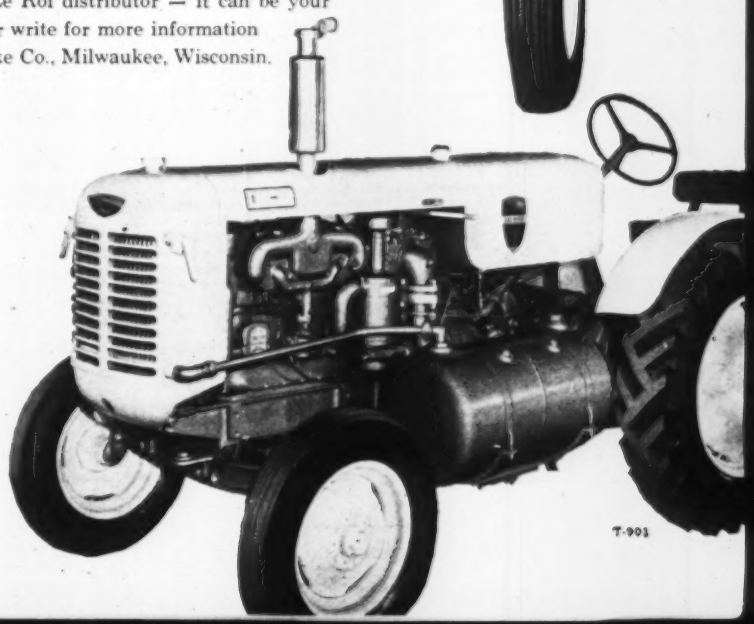
The 42-hp tractor delivers 125-cfm air power to widely scattered spots all over the job-site — over terrain where an ordinary compressor can't even be towed by truck! And when it gets there, you can park it on a hillside, in a ditch ... anywhere you want up close to the job, where short hose lines assure full power at the tool.

There's no dead time while this compressor waits to be towed — it moves itself!

And look at the new features: an upholstered seat with back rest — no more backache-creating bucket; power steering* to increase easy maneuverability; a completely removable hood to speed servicing and cut down on finger-cramping maintenance; completely enclosed battery where it won't check or weather; conveniently grouped, read-at-a-glance control panel; easily-reached, lockable tool box big enough to hold a couple of sinkers or breakers; 12-volt ignition system for fast starts in any weather — all in a modern design that matches serviceability with good looks!

See this newly improved unit at your Le Roi distributor — it can be your hardest-working, best utilized machine. Or write for more information to Le Roi Division, Westinghouse Air Brake Co., Milwaukee, Wisconsin.

*Optional



T-901

LE ROI TRACTAIR AIR COMPRESSORS

PORTABLE AND TRACTAIR® AIR COMPRESSORS
STATIONARY AIR COMPRESSORS
AIR TOOLS

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

Massachusetts—BA 7/14—Commonwealth of Mass., Metropolitan Dist. Comn., Parks Div., 20 Somerset St., Boston, Mass., reconstr. Revere Beach Parkway, Northeast Expressway to Elliot Circle. $800,000. Plans deposit $25.

Vt., Springfield—BA 7/20—Town, Town Hall, Contr. 1, sewage disposal plant, $100,000, Plans deposit $35; Contr. 2, interceptor sewers, $135,000. Plans deposit $35; Contr. 3, sewage pumping stations, $160,000, Plans deposit $20. Baker & Wheeler, 36 State St., Albany, N. Y., engrs. CD 11/1/57.

† **Connecticut**—BLAST DEFLECTORS—BA On Or About 7/22—U. S. Eng., 310 State St., Springfield, Mass., installation blast deflectors and hatch covers on existing underground missile storage structures, 12 Nike Sites, Bridgeport and Hartford Defense Areas. CD 2/13/57.

† **Maine**—BLAST DEFLECTORS, etc.—BA On Or About 7/23—U. S. Eng., 562 Congress St., Portland, Me., blast deflectors and hatch covers on existing underground missile storage structures, 4 Nike sites, Loring Air Force Base Defense Area, ENG-19-016-60-3. $10,000.

BUILDINGS—BA

N. H., New Hampton—SCHOOL—BA 7/14—Town School Dpt., Community school remodeling and addn. $875,000. Plans deposit $15. Alfred T. Granger & Assoc., Granger Circle, Hanover, archts.

BUILDINGS—SLC

▲ **Conn., Old Saybrook**—PLANT—R. R. Donnelley & Sons Co., 350 E. 22 St., Chicago, Ill., soon lets contract 1 story, 101,700 sq. ft., brick, concrete printing plant, School House Lane. $2,350,000. Naess & Murphy, 244 S. Michigan Ave., Chicago, Ill., archts. CD 5/7.

HEAVY CONSTRUCTION—LB & CA

† **Dist. P. Wks., First Naval Dist.**, 495 Summer St., Boston, Mass., cancelled bids to have been opened June 25, constr. target U. S. Naval Station, NBy 11082 Spec. No. 11082/56, BRUNSWICK, ME. $25,000-$100,000. CD 6/15.

VERMONT—State Hy. Dpt., State House, Montpelier, S. V. Rossi Constr. Co., Inc., 49 McDermott Ave., Torrington, Conn. CA $663,022. drainage, subbase, with bit. c. conc. surf. course, Town Mt. Holly, Vt. Rte. 103, the Rutland-Ludlow Rd., beginning approx. 5.74 mi. westerly Mt. Holly-Ludlow Town line and exten. easterly 3.243 mi. Proj. F-025-1 (11) Mt. Holly. Bids June 19. CD 6/24, under LB.

▲† **U. S. Eng.**, 424 Trapelo Rd., Waltham, Mass. cancelled bids to have been opened June 30, missile facility, FY 59, Ethan Allen Air Force Base, ENG-19-016-59-134. WINOOSKI, VT. Est. $3,500,000-$4,500,000. CD 6/22.

Pacella Bros., Corp., 145 Washington St., Dedham, Mass., LB $215,335 est. $250,000, twin 30 in. inverted siphons across Prudential Site, BOSTON, MASS. P. Wks. Dpt., City Hall Annex, Boston, Mass. Bids June 22. CD 6/9.

▲ **R. Zoppo Co., Inc.**, 842 Boston, Providence Hy., Norwood, Mass. CA $2,765,153, est. approx. $2,800,000, Contr. 273, constr. Deer Island Sewage Treatment Plant, BOSTON, MASS. Commonwealth of Mass., Metropolitan Dist. Comn., Constr. Div., 20 Somerset St., Boston, Mass. Bids June 18. CD 6/23, under LB.

Chesterbrook Constr. Co., Inc., 3 Lowell St., Arlington, Mass., LB $136,501 est. $150,000, street work, LEXINGTON, MASS. Bd. Selectmen, Town Office Bldg., Lexington, Mass. Whitman & Howard Inc., 89 Broad St., Boston, Mass., engr.

DiMascio Bros. & Co., 53 Gilbert St., Quincy, Mass., LB $158,199. est. $200,000. Contr. No. 37, sewers, Weymouth and East Weymouth, WEYMOUTH, MASS. Bd. P. Wks., 402 Essex St., Weymouth, Mass. Bids June 22. CD 6/9.

† **Hart Engineering Co.**, 185 Globe St., Providence, R. I. LB $359,950. est. $457,235. heating plant expan., U. S. Naval Station, NBy 22934. Spec. 22934/58. NEWPORT, R. I. Dist. P. Wks. Office, 1st Naval Dist. Bldg. 37, 495 Summer St., Boston, Mass. Charles A. Maguire & Assoc., Turks Head Bldg., Providence, R. I., engrs. Bids June 23. CD 6/3.

BUILDINGS—LB & CA

Blanchard Stebbins, Inc., 330 Lincoln St., Manchester, N. H. LB $500,667. TREATMENT BLDG. GREENFIELD, N. H. Crotched Mountain Foundation, Greenfield, N. H. Bids June 23. CD 5/26.

▲ **William H. Brill**, 43 Summit St., Waterford, Conn., Owner Builds. $1,500,000, 150 HOUSES. Great Neck Rd., WATERFORD, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

N. Y., Mineola—BA 7/14—County Executive Nassau County, Old County Court House, bridge to link Island Park and Harbor Isle. $224,000. CD 12/17/45.

† **Del., New Castle**—LIGHTING SYSTEM—BA 7/16—Federal Aviation Agency, 347 Federal Bldg., New York International Airport, Jamaica, N. Y., centerline approach lighting system New Castle County Airport IFB-1-59-135381.

N. J., Netcong—BA 7/21—Borough, Borough Hall, test well along Musconetcong River, $66,000, Reed J. Washer, Furnace St., Netcong, engr.

BUILDINGS—BA

▲ **Md., Riverdale**—OFFICE—BA 7/14—W. M. Kiplinger, 1729 H St., N. W., Wash., D. C., (selected list bidders), office, East-West Hy., opposite Prince George's Plaza Shopping Center. Chatelain Gauger and Nolan, 1632 K St. N. W., Wash., D. C., archts. $1,500,000. CD 12/4/58.

▲ **N. J., Gloucester**—SCHOOL—BA 7/16—Bd. Educ., junior-senior high school, $1,000,000. Plans deposit $100, Edwards & Green, 17 S. 5 St., Camden, archt.-engrs. CD 8/29.

N. J., Toms River—HOSPITAL—BA 7/20—Community Memorial Hospital Bldg. Fund Assocs., Inc., 100 Hooper Ave., 50-bed hospital addn., $800,000, Micklewright & Mountford, 90 E. Stuyvesant St., Trenton, archts.-engrs. CD 3/3/58.

Md., Laurel—SCHOOL—BA 7/21—D. C. Govt., Bldgs. & Grounds, 499 Pennsylvania Ave., N. W., Wash., D. C., school at District Training School. Plans deposit $50. CD 9/16/43, under Wash., D. C.

▲ **Pa., New Castle**—SCHOOL—BA 7/23—Pa. P. School Bldg. Auth., 101 S. 25th St., Harrisburg, secondary school for Union Twp. School Dist., Proj. 802-535. $2,000,000. Plans deposit $50. B. J. McCandless, 239 4th St., Ellwood City, archts. CD 6/10/58.

HEAVY CONSTRUCTION—LB & CA

▲ **Corbetta Constr. Co.**, 220 E. 42nd St., New York 17, N. Y., LB $3,977,000 (concrete), LB $4,250,000 (steel), (8 bidders), Contr. No. 3090, superstructure framing for new Pier 40, North River, Manhattan Boro, NEW YORK, N. Y. Comr. Marine & Aviation, Rm. 304, Battery Maritime Bldg., foot of Whitehall St. (South Ferry), New York 7, N. Y. Bids June 26. CD 6/19.

NEW JERSEY—The Central Railroad Co. of New Jersey, office of B. J. Minetti, ch. engr., Jersey City Terminal, Room 444, foot of Johnston Ave., Jersey City, Public Contractors, Inc., Blackwood, N. J., CA $768,000, est. $1,358,000, bridge and approaches over crossing, Woodbridge-Carteret Rd., Middlesex Co. Bids June 19. CD 6/8.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 6/25,

J. F. Chapman & Sons, Inc., 1303 N. Broad St., Ilside, N. J., LB $1,566,519 (7 bidders), grading, paving, bridges and relocation oil line in connection with constr. 2.022 mi. Rte. 169, Sect. 1, from Constable Hook to Point Breeze, Hudson Co. CD 6/5.

NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 6/24,

J. Vinch & Sons, 28 Jennette Ave., Trenton, N. J., LB $178,118 (5 bidders), drainage imprvs., 1¾ mi. section U.S. Rte. 130, Burlington, Bordentown and Florence Twps., Burlington Co. CD 6/4.

PENNSYLVANIA—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg,
cancelled bids to have been opened June 19, 8,259 ft. crushed aggreg. base with bit. surf. variable in width, L.R. 48061 (5) Northampton Boro, Allen Twp., Northampton Co. Will re-advertise. CDS/18.

▲ **PENNSYLVANIA**—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg,

Ralph Myers Contg. Corp., Box 125, Pitcairn, Pa. CA $4,762,863, 19,213 ft. divided hy. c. conc. 24 ft. wide each side 4 ft. concrete divisor, 8 bridges, section Butler-By-Pass, T. R. U. S. 422, Butler and Summit Twps., Butler Co. Bids June 12. CD 6/18, under LB.

Housing Engineering Co., 1229 W. Mt. Royal Ave., Baltimore, Md., CA $200,000, replace wood grandstand with steel seats, BALTIMORE, MD. Maryland Jockey Club (Pimlico Track), 5201 Park Heights Ave., Baltimore, Md. CD 12/15/53.

A. A. Dyer Co., Reisterstown, Md., CA $367,000, Contr. 664-W, water pumping station, 9th District, TOWSON, MD. Baltimore County Executive, County Office Bldg., Towson 4, Md. Bids May 14. CD 5/1.

Kenkels & McCoy, 6100 N. 20 St., Phila., Pa., CA $654,623, water filtration plant addn., WILMINGTON, DEL. Bd. Water Comm., 16 and Market Sts., Wilmington, Del. Bids June 3. CD 6/9, under LB.

BUILDINGS—LB & CA

▲ **Interboro General Hospital**, c/o Dworman Assocs., 719 Linden Blvd., Brooklyn, N. Y., Owner Builds, $1,000,000, HOSPITAL, Linden Blvd. and Elberts Lane, BROOKLYN, N. Y. Gloster & Goster, 253 Sunrise Hy., Rockville Center, N. Y., archts. CD 3/19.

Dworman Holding, Inc., 400 Park Ave., New York 22, N. Y., Owner Builds, $236,000, WAREHOUSE and OFFICE, 513-29 Irving Ave., BROOKLYN, N. Y. Gloster & Gloster, 222 Sunrise Hy., Rockville Center, N. Y., archts. CD 4/21.

▲† **Dean Constr. Co., Inc.**, 29-28 41st Ave., Long Island City, N. Y., CA $1,779,000, 120 unit Capehart HOUSING, Seneca Ordnance Depot, ENG-30-075-59-219. ROMULUS, N. Y. U. S. Eng., 111 E. 16th St., New York 3, N. Y. Bids May 13. CD 5/15, under LB.

▲ **Badger Mfg. Co.**, 230 Bent St., Cambridge, Mass., CA Est. $4,000,000, design and constr. MALEIC ANHYDRIDE PLANT, 2nd unit, ELIZABETH, N. J. Reichhold Chemicals, Inc., 726 Rockefeller St., Elizabeth, N. J.

▲† **B. J. Lucrarelli & Co., Inc.**, 1100 McCarter Hy., Newark, N. J., CA $2,033,900, 130 unit Capehart HOUSING, FORT MONMOUTH, N. J. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids April 2. CD 4/7, under LB.

T. C. Wheaton Co., Millville, N. J., Separate Contracts, $125,000, 1 story, 28,800 sq. ft., brick, block and steel: PLANT, Bldg. No. 64, MILLVILLE, N. J. J. L. Krause, co. engr.

▲ **Holly Hills, Inc.**, c/o Arthur Greenburg, Mount Holly, N. J., Separate Contracts, $2,418,000, RESIDENTIAL DEVELOPMENT (186), Mount Holly-Burlington Rd., MOUNT HOLLY, N. J.

McClain Constr. Co., Inc., 200 S. 13th St., Phila., Pa., CA $943,800, Rose Tree Union Junior HIGH SCHOOL and sewage disposal plant, LIMA, PA. Central Delaware County Jt. School Auth., Lima, Pa. Bids Apr. 23. CD 5/5, under LB.

R. S. Mowery & Sons, Inc., 527 Mooreland Ave., Carlisle, Pa., CA $885,183, JUNIOR-SENIOR HIGH SCHOOL, Tussey Mt. Jt. School Dist. Proj. 802-642, SAXTON, PA. Pa. P. School Bldg. Auth., 101 S. 25th St., Harrisburg, Pa. Bids May 21. CD 5/27, under LB.

▲ **Brookmead Farms** 1416 Baywood Ave., Upper Darby, Pa., Separate Contracts, $3,944,000, RESIDENTIAL DEVELOPMENT (136), Walker Rd., etc. VALLEY FORGE, PA.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	Mississippi to Rockies
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

▲ **Hughes Foulkrod Co.**, 1505 Race St., Phila., Pa., CA $5,000,000, MANUFACTURING BLDG. OFFICE, WAREHOUSE, LABORATORY BLDGS. and paving, WHITEMARSH, PA. McNeil Laboratories, Inc., 2900 N. 17th St., Phila. Pa. Vincent G. Kling, 917 Corinthian Ave., Phila., Pa., archt. McCormick Taylor Assocs., Suburban Station Bldg., Phila., Pa. engrs. CD 7/29/57.

▲ **Merando, Inc.**, 4098 Minnesota Ave. N.E., Wash., D. C., LB $2,352,597, Base Bid (8 bidders), Spring Brook HIGH SCHOOL, Silver Spring, ROCKVILLE, MD. Montgomery Co. Bd. Educ., Rockville, Md. Bids June 25. CD 6/18.

▲† **Venneri Co.**, 1906 K St. N.W., Wash., D. C., LB $2,273,000 (15 bidders) Army MEDICAL SERVICE GRADUATE SCHOOL, Walter Reed Army Medical Center, WASH., D. C. U. S. Eng., 1 and Douglas Sts. N.W., Wash., D. C. Bids June 23. CD 6/2.

▲† **Charles H Tomkins Co.**, 1737 K St. N.E., Wash., D. C., CA $1,484,821, superstructure U. S. CAPITOL BLDG., East Front Extension, WASH., D. C. U. S. Govt. Office of the Architect of Capitol, Wash., D. C. CD 5/18, under LB.

▲ **Robino Development Co.**, McCanons Ch. Rd., Wilmington, Del., Separate Contracts, $5,000,000, 500 RESIDENTIAL DEVELOPMENT, Kirkwood Highway, WILMINGTON, DEL.

Cantera Constr. Co., 1508 Penna. Ave., Wilmington, Del., CA $400,000, super food MARKET, WILMINGTON, DEL. County Investment Corp., c/o contractor. W. Ellis Preston, 90 E. Jefferson St., Wilmington, Del., archt.

SOUTH

HEAVY CONSTRUCTION—BA

† **Ga., Macon**—GUIDED MISSILE FACILITY—BA about 7/27—U. S. Eng., 200 East St. Julian St., Savannah, guided air missile facility, Robins Air Force Base, Houston County, ENG-09-133-60-2. Bids June 15, rejected. CD 6/22, under LB.

BUILDINGS—BA

Ga., Washington—HOSPITAL—BA 7/16—Wilkes County, Washington, hospital $850,000-$900,000. Plans deposit $50. Gregson & Assocs., Mortgage Guarantee, Bldg., Atlanta, archts. CD 6/26.

HEAVY CONSTRUCTION—LB & CA

† **Newman & Co.**, 72 11 N.E., Atlanta, Ga., LB $320,600, training bldg. Atlanta Naval Air Station NBy 19929 ATLANTA, GA., U. S. Navy P. Wks. Office, Sixth Naval Dist. Bldg. No. 13, Naval Base, Charleston, S. C. Bids June 24. CD 5/27.

Wright Contrg. Co., P.O. Drawer 1580, Columbus, Ga., CA $245,548, concrete pipe sanitary sewer imprvs. Contract A Division 2, Fulton Co., ATLANTA, GA., Fulton Co. Bd. Comrs., Atlanta, Ga. Bids June 18. CD 6/24, under LB.

▲ **FLORIDA**—State Rd. Dpt., Municipal Auditorium, Bayfront Park, Miami.

Fla.—Powell Bros., Inc., 4500 S. State Rd. No. 7, (Davie R. Station, Fort Lauderdale, Fla., and **Heavy Constructors, Inc.**, 2908 N.W. N. River Dr., Miami, Fla., CA $3,160,764, 2,114 ft. structure, seventeen 40 ft. prestressed concrete slab spans on prestressed concrete pile bents, etc., bridge over West Channel of MacArthur Causeway and portion roadway approaches, FA Proj. U-039-1 (5), Job No. 87060, 31117, SR A-1-A, West MacArthur Causeway, Dade Co.;

Fla.—L & A Contg. Co., Box 1651, Hattiesburg, Miss., CA $1,282,802, 1,506 ft. in length dual bridges with roadways 52 ft. wide, 0.297 mi. over Miami Sts. N. W. 71 through N. W. 75 and F. E. C. R.R., FAI Proj. I-95-1(12) 6, Job No. 87270-3402, SR 9, Dade Co. Bids May 22. CD 5/28, under LB.

† **William S. Smith Constr. Co.**, 4963 New Beach Blvd., Jacksonville, Fla., LB $287,515, storage and transit warehouse, Naval Auxiliary Air Station, NBy 18508 MAYPORT, FLA., Navy P. Wks. Office, Naval Base, S. C. Bids June 23. CD 5/25.

† **Atlantic States Constr. Co.**, 7 Baltimore Place N.W., Atlanta, Ga., LB $709,000, berthing facility for aircraft carriers U. S. Naval Air Station NBy 984 PENSACOLA, FLA., U. S. Navy P. Wks. Office, Naval Base, S. C. Bids June 23. CD 5/14.

† **E. L. Walker**, 3105 N. Davis, Pensacola, Fla., LB $206,925, fueling facility, aircraft carriers, addns. Naval Air Station, NBy 25494 PENSACOLA, FLA., Navy P. Wks. Officer, Naval Base, S. C. CD 5/21.

ALABAMA—State Hy. Dpt., Montgomery 4.

Watkins Constr. Co., 1705 Forrest Ave., Gadsden, Ala., CA $432,000, Quintard Ave. extension 1.6 mi. to connect with Ala. 21 No. Choccolocco Creek Bridge, Calhoun Co. Awarded June 17.

▲ **MISSISSIPPI**—State Hy. Comn., State Office Bldg., Jackson. Bids opened 6-23.

J. B. Michael & Co., Inc., Box 5895, Memphis, Tenn., LB $4,242,002, earth approaches and approach bridge spans 1.52 mi. US Hy. 90 between Biloxi and Ocean Springs, SP 90-66-48(11). Contr. I; LB $1,722,838, bascule span adjacent spans and piers 0.08 mi. US Hy. 9 between Biloxi and Ocean Springs, SP 90-66-48(1), Contr. II, both in Harrison and Jackson Counties. CD 6/11.

† **Warren Bros. Road Co.**, P.O. Box 27, Columbus, Miss., LB $258,875 (5 bidders), Proj. 3G18, paving, stabilized shoulders Mississippi Hy. 15 to US 82, Dancy Maintenance Area and Little Mountain Development, Natchez Trace Parkway, MISSISSIPPI. Bureau P. Roads, Dpt. Commerce, First National Bank Bldg., Florence, Ala. Bids June 23. CD 6/8.

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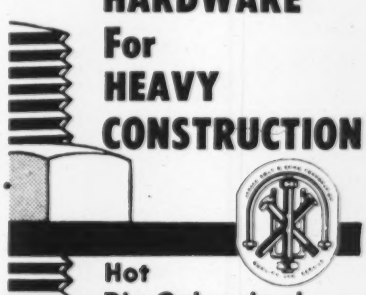
HARDWARE For HEAVY CONSTRUCTION



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Genuine Wrought Iron
Mild Steel
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Immediate delivery...

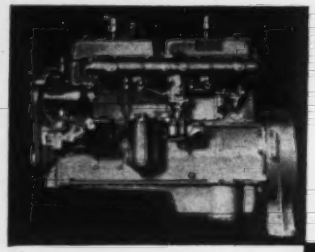
JERSEY BOLT & SPIKE CORPORATION

for VERSATILITY

MARION TRUCK-CRANE

with two

WAUKESHA ENGINES

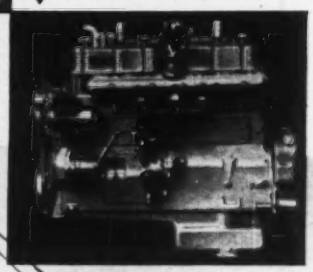


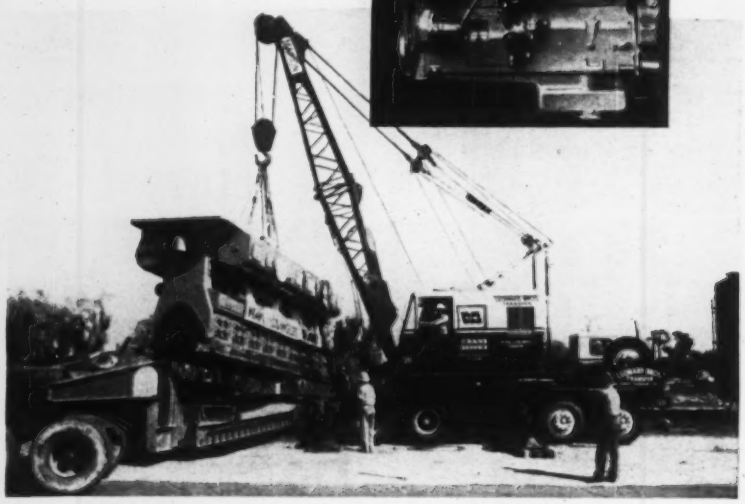
Powering the Carrier—145-GKB Waukesha Gasoline, six cylinders, 5¼-in. x 6-in., 779 cu. in. displ.

▼

▲

Powering Crane (boom)—140-GK Waukesha Gasoline, six cylinders, 4½-in. x 5½-in., 525 cu. in. displ.





Leonard Bros. Transfer of Miami—one of Florida's largest truck-crane users—has worked a wide variety of jobs quickly *and profitably* with their Marion Type 43-M mobile truck-crane. The upper frame has a Waukesha 140-GK Engine and Twin Disc torque converter; the Henderson Carrier has a 145-GKB Waukesha Engine. The truck crane is shown unloading a 2700 hp Diesel engine from railway flat cars to carry-all truck, later unloaded at power plant in Sebring, Florida. The huge engine with its two components, weighing 34½ tons and 31½ tons, took two separate lifts. Seven parts of line were used with the 43-M's basic 30 ft. boom working at a close radius. Get Engine Bulletins 1548 and 1553.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES

Factories — Waukesha, Wisconsin, and Clinton, Iowa 431

LOUISIANA — State Dpt. Hys., Rm. 307, Hy. Office Bldg., Baton Rouge,

W. R. Core, Covington, La., CA **$563,996,** grading, wid'n. existing pavement 11.033 mi. Covington-Folsom Hy. and Covington-Waldheim Hy., Rtes. LA 25 & LA 21. SP Nos. 59-02-14, 13-11-06 & 30-01-09 FASP No. S-83(2), St. Tammany Parish. Bids May 20. CD 5/26, under LB.

▲ **LOUISIANA**—State Dpt. Hys., Rm. 307, Hy. Office Bldg., Baton Rouge,

La.—**H. L. Aller & Sons,** Elton, La., CA **$989,598,** Caminada Bay bridge and approaches 1.035 mi. Rte. LA 1, SP 64-01-22 FASP No. S-253 (5), Jefferson Parish.

La.—**Coastal Contractors, Inc.,** Box 911, Baton Rouge, La., CA **$1,527,029,** Intracoastal Waterway bridge and approaches (Larose), Rte. 1, 0.705 mi. grading, small drainage structures. SP No. 64-05-23 FASP No. S-523(7), Lafourche Parish. Bids May 20. CD 5/26, under LB.

Roland Constr. Co., Box 850, Alexandria, La., CA **$655,030,** repairing main gravity outfall sewer, MONROE, LA. City, City Hall, Monroe, La. CD 5/5, under LB.

▲ **S. N. Nielsen Co.,** 3059 Augusta Blvd., Chicago, Ill., CA **$1,575,031,** Contr. 3, pumping station and sewage treatment plant, ASHLAND, KY. City, City Hall, Ashland, Ky. Bids May 20. Grand total $4,052,623. Awarded June 19. CD 5/27, under LB:
Ambrosius Industries, Inc., 2197 S. Floyd St., Louisville, Ky., CA **$589,382,** Contr., collection sewers (Ashland, Ky.);
Mountain States Constr. Co., Spring Hill, W. Va., CA **$888,210,** Contr. 2, interceptor sewers (Ashland, Ky.).

† **Anderson & Gore Construction. Co.,** 407½ Union St., Nashville, Tenn., LB **$874,508,** remodeling and alterations, Wherry HOUSING, DA-15-056-59-116, FORT CAMPBELL, KY. Purchasing & Contracting Officer, Fort Campbell, Ky. Bids June 23. CD 6/9.

▲ **Bechtel Corp.,** 220 Bush St., San Francisco, Calif., CA **$50,000,000.** 350 mi. 30 in. diam. pipe line, TENNESSEE, ILLINOIS and INDIANA. Mid-Western Gas Transmission Co., Tennessee Bldg., Houston 1, Tex. Ken Britain, c/o owner. ch. engr.

▲ **Hyde Constr. Co.,** 1804 N. Mills St., Jackson, Miss., CA Est. **$5,000,000,** natural gas transmission lines, DeKalb, Smith, Cannon, Cumberland, Putnam, White and Wilson Counties, TENNESSEE. Middle Tennessee Natural Gas Utility Dist., Dearman Bldg., Smithville, Tenn. CD 5/13.

BUILDINGS—LB & CA

Davis & Spiers, Inc., 3101 Moore St., Richmond, Va., CA Est. **$600,000,** 110,000 sq. ft. MANUFACTURING PLANT addn. 320 Hull St., RICHMOND, VA. Virginia Folding Box Co., 320 Hull St., Richmond, Va. Charles Shiflett, 1 E. Main St., Richmond, Va., archt.

▲ **McDevitt & Street Co.,** Builders Bldg., Charlotte, N. C., CA **$1,694,800,** APARTMENTS for married students, RALEIGH, N. C., North Carolina State College, Hillsboro St., Raleigh, N. C. Bids April 30. CD 5/14, under LB.

▲ **John C. Heslep Co.,** 1401 Main St., Columbia, S. C., CA est. **$1,500,000.** SHOPPING CENTER, COLUMBIA, S. C. Evans Corp. 2020 Gervais St., Columbia, S. C. CD 2/6.

Daniel Constr. Co., 429 N. Main St., Greenville, S. C., CA Est. **$200,000.** MILL ADDN., DILLON, S. C. Selma Hosiery Mill, Dillon, S. C.

▲ **Barger Constr. Co.,** Mooresville, N. C., CA **$1,000,000,** mfg. PLANT, TIFTON, GA. Peerless Woolen Mills, c/o contractor.

Frank J. Rooney, Inc., 712 SE 17 St., Fort Lauderdale, Fla., CA **$781,513** BANK addn., 225 E. Las Olas Blvd., FORT LAUDERDALE, FLA., First National Bank, 255 E. Las Olas Blvd., Fort Lauderdale, Fla. CD 5/26, under LB.

Junez Constr. Co., 2045 NE 151 St., N. Miami Beach, Fla., CA **$450,000,** 55 one story 44 x 57 RESIDENCES, N. W. 198 St. and N. W. 39 Ave., MIAMI, FLA. Community Development Corp., 19400 N. W. 37 Ave., Miami, Fla., Jack Cooper, 668 NE 167 St., North, Miami Beach, Fla., archt.

Construction Engineers, Inc., P.O. Box 582, Jasper, Ala., CA **$150,000,** MINE PLANT facilities, PARRISH, ALA. Alabama By-Products Corp., c/o contractor. Bids May 18. CD 5/15.

Delta Constr. Co., 314½ Ashland Ave., Lexington, Ky., LB **$150,500,** (12 bidders) 22,000 sq. ft. brick and rein.-con. WAREHOUSE, FRANKFORT, KY. Commonwealth of Ky., Div. Purchases, Frankfort, Ky. Bids June 23. CD 6/11.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

O., **Cleveland** — BA 7/16 — Comrs. Cuyahoga Co., 451 County Administration Bldg., 1219 Ontario St., Zone 13, imprv. Biddulph Rd., Tiedeman to Ridge Rds. $338,000. Plans deposit $25. Albert S. Porter, Standard Bldg., Cleveland 13, O., co. engr. CD 6/27.

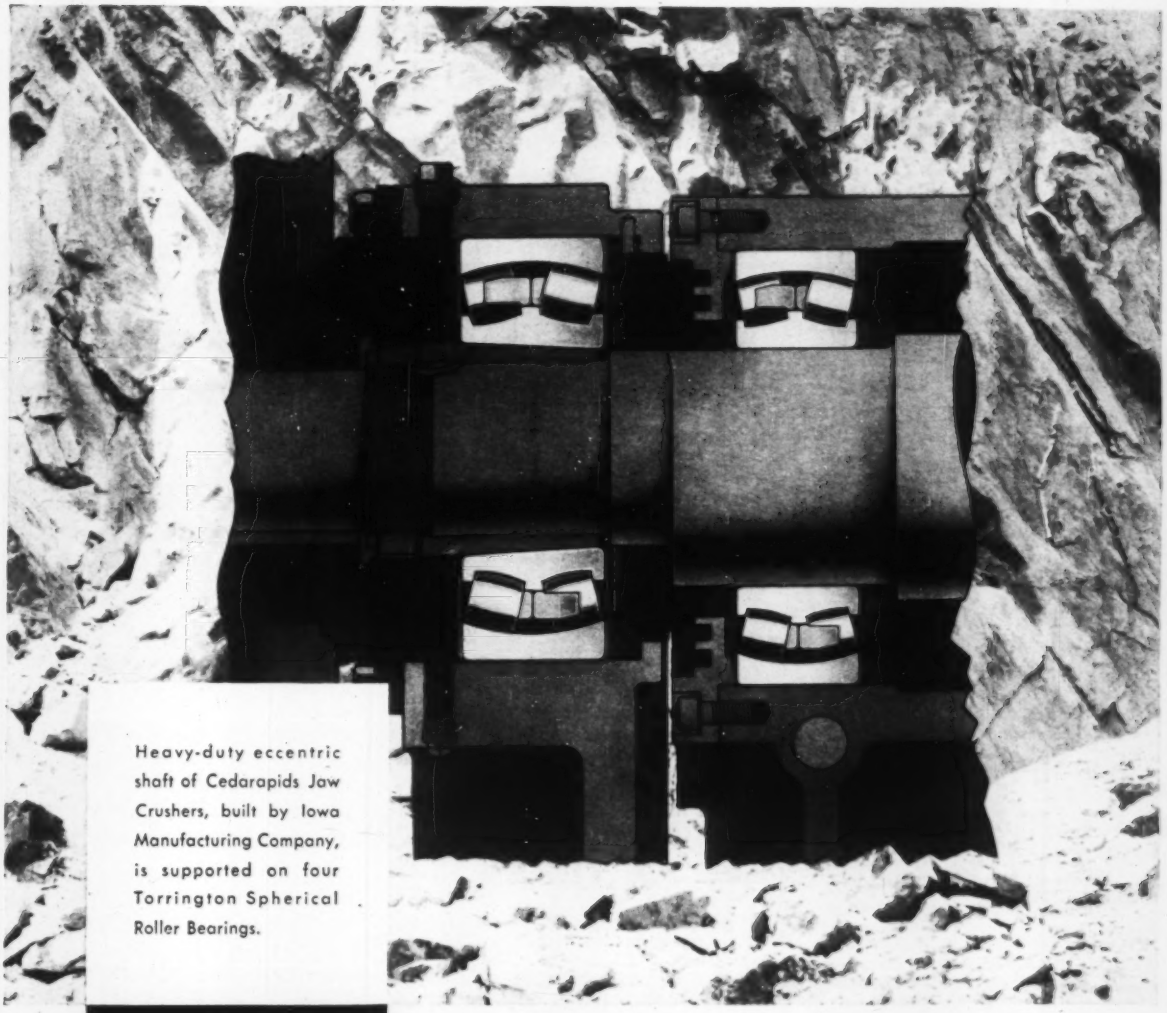
HEAVY CONSTRUCTION—LB & CA

Homer Merritt Constr., 444 Broadway, Lorain, O., CA **$179,388** (4 bidders), paving 10 roadways, southwest area, LORAIN, O. City, City Hall, Lorain, O. CD 11/14/50.

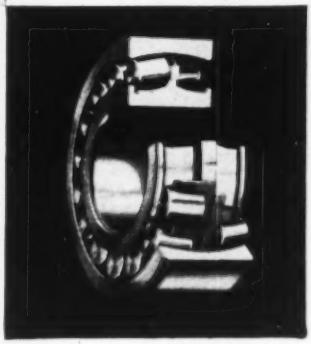
INDIANA—State Hy. Dpt., State House Annex, Indianapolis,

Tri-Angle Constr., Oolitic, Ind., CA **$619,939,** bit. surf. crushed aggr. base, Contr. R-4513, S-290 (2), Dearborn Co. Bids May 28. Awarded June 15. CD 6/8, under LB.

(Continued on page 96)



Heavy-duty eccentric shaft of Cedarapids Jaw Crushers, built by Iowa Manufacturing Company, is supported on four Torrington Spherical Roller Bearings.



Send for the new Torrington Spherical Roller Bearing Catalog #258

Designed for tough service

Cedarapids Jaw Crushers are designed throughout for tough, day-in, day-out service, right down to the bearings used on the eccentric shaft.

Torrington Spherical Roller Bearings are used because of their ability to align under load, rugged construction, stamina and stability. These bearings provide high radial and thrust capacity—more than enough to withstand the severest loads and shocks the jaw crushers can deliver in hard service.

Torrington Spherical Roller Bearings also are used in Cedarapids roll crushers, hammermills and impact breakers—and in many other construction equipment applications. For your toughest jobs, rely on Torrington Bearings and Torrington engineering experience. **The Torrington Company, South Bend 21, Ind. and Torrington, Conn.**

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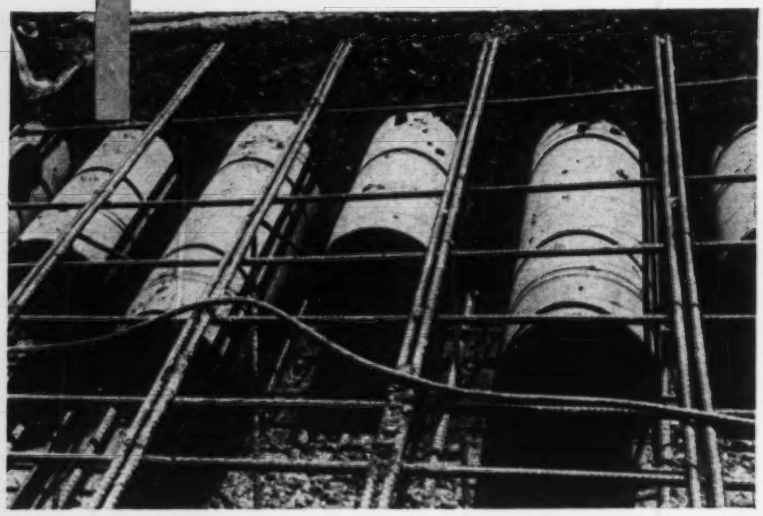
SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST

VOIDS reduce weight and deflection in concrete bridge decks



Highway Bridge, Ohio Rt. 76 near Waterford, Ohio, Designed by Ohio State Highway Department, Contractor: Shelley & Sands Construction Company, Thornville, Ohio.

Form voids in concrete construction with

SONOCO SONOVOID FIBRE TUBES

and save time, labor, materials and money!

Because voids reduce weight and deflection in concrete slabs, the voided system is particularly applicable to bridge decks, where long spans with high rigidity are required.

Approximately 2500 feet of 14" O.D. SONOVOID Fibre Tubes were used to form voids in the highway bridge shown here. With a warped center span of 62 feet requiring a slab depth of 28 inches, the voids reduced weight while maintaining necessary structural rigidity.

By displacing low-working concrete at the neutral axis, SONOVOID Fibre Tubes reduce weight in bridge decks, floor and roof slabs, and in precast, prestressed concrete piles . . . and save concrete and reinforcing steel, too!

Order Sonoco SONOVOID Fibre Tubes in sizes from 2.36" to 36.9" O.D., in specified lengths or standard 18' shipping lengths. Can be sawed on the job. End closures available.

Void hold-down method using steel strapping.

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- ATLANTA, GA.
- BRANTFORD, ONT.
- MEXICO, D. F.

SONOCO

Construction Products

SONOCO PRODUCTS COMPANY

3890

(Continued from page 94)

† **Grant Contracting Co.**, Garst Ave. and Avenue B, Greenville, O., LB **$96,412**, (2 bidders), maintenance and dredging La Grange and Peoria pools, Illinois Waterway, ENG-11-032-59-25, ILLINOIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids June 10. CD 6/4.

Geneva Constr. Co., 111 Downer Pl., Aurora, Ill., LB **$347,462** water supply, sewage disposal plant and lights, Municipal Airport, AURORA, ILL. City of Aurora, City Hall, Aurora, Ill.

Keeley Bros. Contrg. Co., 4211 State St., East St. Louis, Ill., LB **$330,600**, Sewer Proj. Sect. 81-CS incl. 0.82 mi., 60 in. storm water sewer lines between Kings Hy. and Parkside Pumping Station, East Side Levee and Sanitary Dist. at L & N Railroad and Harding Ditch, EAST ST. LOUIS, ILL. City, City Hall, East St. Louis, Ill. Bids June 17. CD 3/30.

E. A. Meyer Constr. Co., Skokie Hy., Waukegan, Ill. LB **$386,984**, airport runway, paving, Waukegan Airport WAUKEGAN, ILL. City of Waukegan, City all, Waukegan, Ill. CD 9/19.

Grantwood Constr. Co., Larkin Willimas Rd., St. Louis, Mo., LB **$94,751**, grading, drainage, base constr. Mt. Vernon Municipal Airport (Waukegan, Ill.).

▲† **Five Boro Constr. Corp.**, 2 Lafayette St., New York, N. Y., LB **$3,447,367** (5 bidders), dormitories, dining hall, service club and misc. work, Richard I. Bong Air Force Base, ENG-11-032-59-85, KANSASVILLE, WIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids June 23. CD 6/3.

▲† **Great Lakes Dredge & Dock Co.**, 228 N. LaSalle St., Chicago 1, Ill., LB **$6,806,592**, dredging Round Island shoals, St. Mary's River, CIVENG-20-064-59-87, MICHIGAN. U. S. Eng., 1101 Washington Blvd., Detroit 31, Mich. Bids May 21. CD 5/4.

BUILDINGS—LB & CA

Micka Bldg. Co., 712 Marshall Bldg., Cleveland 13, O., Owner Builds. **$544,000**, 32 HOMES, Dalebrook Ave., BROOK PARK, O. Marvin J. Rukin, 13947 Cedar Rd., Cleveland 18, O., archt.

▲ **Sagamore Hills Estates**, 9219 Miles Ave., Cleveland 5, O., Owner Builds. **$3,125,000**, 139 HOMES, NORTHFIELD, O. T. W. Billings, c/o owner, engr.

C. W. Fry Constr. Co., Greenville, O., CA **$556,447**, general contract, JUNIOR HIGH SCHOOL and E. G. Shaw GRADE SCHOOL addns., XENIA, O. Bd. Educ., Beavercreek School Dist., R. 4, Xenia, O. Bids May 19. CD 5/27, under LB.

▲ **Peter Schumacker & Sons, Inc.**, 321 S. Spring St., Mishawaka, Ind., CA **$1,796,666**, (4 bidders), Maggies COURT HOUSING PROJ., SOUTH BEND, IND., South Bend Housing Auth., Whitcomb-Keller Bldgs., South Bend, Ind. Bids May 22. Awarded June 23. CD 5/12.

Burton Plumbing & Heating Co., Rochester, Ind., CA **$523,000**, (3 bidders) plumbing and heating, (South Bend, Ind.).

▲† **Kaufman & Broad Building Co.**, 15917 West Seven Rd., Detroit 35, Mich., LB **$5,574,767** (7 bidders), 580-unit Capehart HOUSING, SELFRIDGE AIR FORCE BASE, MICH. Base Procurement Office, Selfridge Air Force Base, Mich. Bids May 28. CD 5/19.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

† **Neb., Omaha**—OPERATIONS AC&W—BA On Or About 7/21—U. S. Eng., 1709 Jackson St., operations AC and W addn., Omaha Air Force Station, ENG-25-066-59-157. $60,000-$90,000.

▲† **Colo., Colorado Springs**—CHAPEL—BA 7/21—Dpt. Air Force, Box 1670, academy chapel U. S. Air Force Academy, IFB-05-613-59-10. Approx. $3,000,000. Extended date. Skidmore, Owings & Merrill, 3333 N. El Paso St., engrs. CD 5/26.

† **South Dakota**—BA On Or About 7/22—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., furnishing carbon dioxide fire extinguishing equipment, near Pierre, Oahe Reservoir Proj., ENG-25-066-59-154. $50,000-$70,000. CD 9/23.

▲† **Wyoming**—TM SITE 201—BA On Or About 7/23—Sundance TM Site 201, operations area, Sundance, ENG-25-066-59-133. $1,600,000-$1,800,000.

▲† **N. M., Los Alamos**—PHERMEX FACILITIES—BA About 8/12—Atomic Energy Comm., Los Alamos, Phermex Facilities, TA-15, 12,800 sq. ft., bsmnt., laboratory-office, 12,800 sq. ft. power control bldg., detection and phermex chambers, roads, parking areas, chilled water sys., gas, electric transformer stations, etc., Inv. No. 291-60-1, $1,500,000-$1,700,000. CD 9/12.

BUILDINGS—BA

Tex., Childress — OFFICE, etc. — BA 7/16 — State Hy. Dpt., Austin, resident engineer's office and laboratory, State Proj. MC-25-C-6.

Tex., Junction—OFFICE, etc.—BA 7/16—State Hy. Dpt., Austin, engineer's office, maintenance office and warehouse, State Projs. MC-7-S-7 & MC-7-T-7.

Tex., Yoakum — WAREHOUSE, etc. — BA 7/16 — State Hy. Dpt., Austin, district warehouse and shops and utilities between Hickey St., Tozik St., U.S. 77A and Migi St., Proj. MC 13-M-10.

▲ **Tex., Austin**—BUSINESS ADMINISTRATION, etc.—BA 7/30—University Texas, Main Admin. Bldg., 7 story business administration and 5 story economics bldg. $3,000,000. Plans deposit $50. Page, Southerland & Page, 602 W. Ave., archts. CD 8/14.

HEAVY CONSTRUCTION—LB & CA

Ulland Bros., Inc., 2126 Water St., Duluth, Minn., LB **$100,831** (6 bidders), grade, grav. base 2.5 mi. between CSAH No. 133 and 4.7 mi. north of Alborn, DULUTH, MINN. St. Louis County, Duluth, Minn. St. Louis County, Duluth, Minn. Bids June 22. CD 6/3.

Lametti & Sons, 211 North Pascal St., St. Paul, Minn., LB **$205,961**, Section 3 of sanitary sewer, MAPLEWOOD (P.O. ST. PAUL), MINN. Village, Village Hall, Maplewood, Minn. Bids June 23. CD 6/3;
H. Nodland Constr. Co., Alexandria, Minn., LB **$217,715**, Sections 1 and 2, 62,000 lin. ft. 8 in. sewers Maplewood, Minn.);
Sellin Bros., Hawley, Minn., LB **$120,199** (6 bidders), grade, grav. surf., grav. base and road-mixed bit base 11.8 mi. in and near Princeton, MILACA, MINN. Mille Lacs County, Milaca, Minn. Bids June 23. CD 6/3.

▲† **La Crosse Dredging Corp.**, 140 S. Dearborn St., Chicago 3, Ill., LB **$1,342,149** (2 bidders), alternate II, hydraulic fill flood levee protection, Item L-2-A, St. Louis, CIVENG-23-065-59-60, MISSOURI. U. S. Eng., 420 Locust St., St. Louis 2, Mo. Sverdrup & Parcel, Inc., 917 Olive St., St. Louis 1, Mo., engr. Bids June 24. CD 5/25.

▲† **English Electric Export & Trading Co. Ltd.**, 750 3rd Ave., New York, N. Y., CA **$6,512,313**, furnishing hydraulic turbines, consisting of eight 92,000 hp. fixed blade propeller type hydraulic turbines, complete with draft tube liner, pit liner and appurtenant parts, also incl. tugine model tests and serevices of supervising erectors and master mechanics, Big Bend Reservoir near Fort Thompson, ENG-25-066-59-98, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids May 7. CD 5/12, under LB.

† **Korshoj Constr. Co.**, 1545 Washington St., Blair, Neb., LB **$175,601**, est. $210,213 (8 bidders), Chicago, Milwaukee, St. Paul & Pacific RR bridge over Diversion Channel, ENG-25-066-59093. SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids June 16. CD 6/1.

† **R. S. Krage Co.**, 415 Bluff St., Sioux City, Iowa, CA **$794,059**, C.M. St. P&P RR relocation, Mobridge to Wakpala, near Pierre, Oahe Reservoir Proj. ENG-25-066-59-118, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids June 2, awarded June 10. CD 6/12, under LB.

† **Texas Water Wells**, 951 McCarty Dr., Houston, Tex., LB **$287,575**, est. $368,280. Sched. 1 LB **$330,600**, est. $430,784. Sched. 2 LB **$331,800**, est. $430,784. Sched. 3 (4 bidders) water wells (Aux. sites) Ellsworth Air Force Base, ENG-25-066-59-146. RAPID CITY, S. D. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids June 19. CD 6/3.

▲† **Beacon Constr Co.**, 100 Hano St., Boston, Mass., LB **$1,858,212**, est. $1,617,849 Sched. I, LB **$1,453,660**, est. $1,324,313 (7 bidders) Sched. II, Nike Hercules facilities, Offutt Air Force Base, ENG-25-666-59-126, FORT CROOK, NEB. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids June 23. CD 5/25.

† **U. S. Eng.**, 1709 Jackson St., Omaha 2, Neb., cancelled bids to have opened June 30, nose cone facilities, Offutt Air Force Base, ENG-25-066-59-141, FORT CROOK, NEB. Est. $400,000-$500,000. Will re-advertise. CD 6/12.

Dupsky Constr. Co., Goodland, Kan., CA **$141,881**, 300 mi. telephone lines, Selden, Rexford and Zurich, KANSAS. Rural Telephone Service, Leonora, Kan. CD 1/29/54.

Walters Constr. Co., Box 949, Manhattan, Kan., CA **$92,302**, streets imprvs., MANHATTAN, KAN. City, City Hall, Manhattan, Kan. Bids June 2.

▲† **U. S. Eng.**, Box 267, New Orleans, La., rejected bids opened Apr. 16, part 1, channels and levees, reshaping, etc. 34½ mi. levees, excavating 15.3 mi. channel 10.6 mi. floodwater, clearing; appurtenance Cooper area, Delta, Lamar and Franklin Counties, ENG-16-047-59-115, TEXAS. LB **$1,173,492** CD 5/13, under LB

Carl B. Wagner Engineering Constr., Inc., Box 4116, Austin, Tex., CA **$116,971**, addnl. water-sanitary sewer lines, AUSTIN, TEX. Pat H. Stanford & Assocs., c/o The Marvin Turner Engineers, engrs., 3423 Guadalupe St., Austin, Tex. CD 6/26.

City, Galena Park, Tex., Owner Builds, **$70,000**, water lines replacements, repairing GALENA PARK, TEX. CD 12/22/58.

City, Grand Prairie, Tex., Owner Builds, **$125,000**, general street surf. imprvs., GRAND PRAIRIE, TEX. Jerry Containe, c/o owner, city engr. CD 10/19/57.

City, Grand Prairie, Tex., Owner Builds, **$90,000**, water lines GRAND PRAIRIE, TEX. Jerry Containe, c/o owner, city engr. CD 10/10/57.

Longview Industrial Dists. Inc., Longview, Tex., purchase and hire, **$55,000**, earthwork development near Longview, GREGGTON, TEX.

Bunker Hill Village Council, 11818 Bayhurst Dr., Houston, Tex., Owner Builds, **$90,000**, sanitary sewer sys. rehabilitation Bunker Hill, HOUSTON, TEX. Wm. F. Sullivan & Wyatt C. Hedrick & Stanley, 5201 Fannin St., Houston, Tex., engrs. CD 12/22/58.

† **Nilson-Smith Constr. Co.**, 800 S. 2nd St., Great Falls, Mont., LB **$435,255**, est. $375,390. (3 bidders) two runway overruns each 200 x 1,000 ft. involving 7,000 sq. yds. asphalt concrete paving, 35,000 sq. yds. double bit. surf. Malmstrom Air Force Base, ENG 45-108-59-121, GREAT FALLS, MONT. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash., Bids June 23. CD 5/27.

† **U. S. Eng.**, 1519 S. Alaskan Way, Seattle 4, Wash., cancelled bids to have been opened June 25, furnishing,

Form round concrete overpass piers faster . . . at LESS COST!

Plainfield Road Overpass, across U.S. 66 in Illinois. Designer: Illinois State Highway Commission, Engineer: Benesck & Associates, Chicago, Contractor: E. H. Swenson & Son, Lockport, Ill.

Use time-saving

SONOCO *Sonotube* FIBRE FORMS

for round columns of concrete

On Federal Interstate Highway System projects like the one illustrated, round concrete columns and piers can be formed *faster* when SONOTUBE Fibre Forms are used.

In fact, for buildings, bridges, churches, schools, or wherever there are round concrete columns to be formed, Sonoco SONOTUBE Fibre Forms can do the job . . . and do it faster and more economically than any other method.

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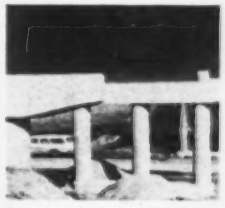

Foreground: Stripped columns, Rear: Forms still in place.

Choose from 3 types: Seamless (premium form for finished columns), "A" Coated (standard form for exposed columns), or "W" Coated (for unexposed columns).

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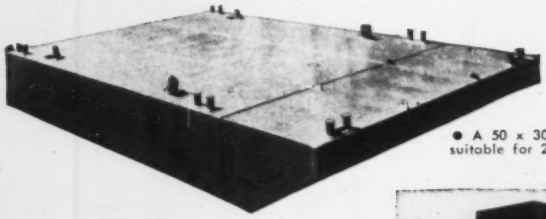
SECTIONAL BARGES



• A 50 x 30 foot four-section barge suitable for 2 yard dragline or clam.

★ Designed specifically for the contractor who has need for transporting his floating equipment in a short time with the least effort and expense. By quickly and easily bolting together any number of sections, the contractor has an extremely adaptable piece of equipment to provide an economical solution to any floating problem. Dragline, trench hoe or clamshell dredging, pile driving, crane lifting, pumping, pipe laying or floating equipment are some of the many uses of the versatile Manitowoc Sectional Barge.

Write for additional information and prices. Sold direct or through Manitowoc Engineering Corporation distributors.

• Easily transported by rail or highway.

• Assembled barge with crane and spuds.

MANITOWOC SHIPBUILDING, INC.
MANITOWOC, WISCONSIN

constr. 46x46 ft. steel radar tower with utilities, Opheim Air Force Station, ENG-45-108-59-131, OPHEIM, MONT. CD 6/3.

BUILDINGS—LB & CA

Adolfson & Peterson, 2817 Bryant Ave. S., Minneapolis, Minn., LB $513,500 (16 bidders), TERMINAL BLDG., County Road C and North Snelling Ave., ROSEVILLE (P.O. ST. PAUL), MINN. Interstate Properties, Inc., 820 Hampden Ave., St. Paul, Minn. Bids June 23. CD 6/10.

Phillips Constr. Co., P.O. Box 67, Osceola, Ark., LB $147,981 est. $250,000 1 story, 42,000 sq. ft. concrete blocks brick, shoe FACTORY, STUTTGART, ARK. Stuttgart Industrial Development Corp., Stuttgart Footwear Co., Stuttgart, Ark. Erhart, Eichbaum Rauch & Blass, 201 Chester St., Little Rock, Ark., archts. Bids June 2.

Sampson Constr. Co. 1801 S. 9th St., Salina, Kan., CA est. $150,000, 500,000 bu. rein.-con. GRAIN STORAGE ELEVATOR addn., McPHERSON, KAN. Rodney Milling Co., Maple and Walnut Sts., McPherson, Kan.

Tellepsen Constr. Co., 1510 Telephone Rd., Houston, Tex., CA est. $110,000, dry cleaning PLANT, 10,000 block Post Oak Rd., HOUSTON, TEX. Grand Cleaners, 507-9 Richmond Ave., Houston, Tex., (Correction—owner's name). CD 6/26.

▲ **Lakewood Bldg. Co.**, 617 Caroline St., Houston, Tex. CA $468,220, 37 DWELLINGS $447,125; 33 DWELLINGS $411,210; 26 DWELLINGS "Woodforest" Subdivision. HOUSTON, TEX. Woodforest Inc., 617 Caroline St., Houston, Tex. Grand total $1,326,557. CD 4/23.

FAR WEST

HEAVY CONSTRUCTION—BA

† **Alaska**—BOILER HOUSE—BA 7/16—National Park Service Dpt. Interior Bldg. 19 and C St., N. W. Wash., D. C., 2,400 ft. masonry boiler house, utilidor and steam heating systems in existing bldgs. Extended date. CD 6/2.

† **California**—BA 7/23—U. S. Eng., 1209 8th St., Sacramento, Calif., fencing Sacramento River Deep water Ship Channel Proj., Yolo Co. ENG 04-167-59-79. CD 9/23/58.

HEAVY CONSTRUCTION—LB & CA

† **Carvers Constr. Co.**, P. O. Box 484, Stockton, Calif., LB $357,000 (7 bidders), 35,000 sq. ft. hangar, shops, utilities, water, sewers, site preparation, Sharpe General Depot. ENG-04-203-59-41B, LATHROP, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids June 23. CD 6/3.

Elmer J. Freethy Co., 1432 Kearny St., El Cerrito, Calif. CA $508,404. 10,000,000 gal. cap. prestressed concrete reservoir, Old Hy. 40, Tormey, Contra Costa Co., OAKLAND, CALIF. East Bay Municipal Utility Dist., 2130 Adeline St., Oakland, Calif. Awarded June 16. CD 6/24, under LB.

Oscar C. Holmes, Inc., Marsh Rd. and Bayshore Hy., Menlo Park, Calif., LB $497,626. (8 bidders) channel imprv., East and West Fork Grayson Creek (Reaches 4 and 5) and chain link fencing on structure sidewalls of West Fork and vehicular bridge, relocation sewer line and chain link fencing on structure sidewalls. Grayson Creek Reaches 4 and 5, Contra Costa Co. WALNUT CREEK, CALIF. Contra Costa Co. Flood Control & Water Conservation Dist., 2400 Oak Grove Rd., Concord, Calif. CD 10/23/53.

J. M. Tanaka Inc., 1058 Kalo, Honolulu, Hawaii, LB $98,163 frontage imprvs. on Punchbowl St. from Hale Kauwila St. to King St., HONOLULU, HAWAII. City and County Honolulu, Honolulu, Hawaii.

BUILDINGS—LB & CA

† **Nakaura Constr. Co.**, Ltd., 503a Libby Honolulu, Hawaii, LB $491,834, 30,000 sq. ft. ARMORY special troops bldg., HONOLULU, HAWAII, Hawaii Army National Guard, Fort Ruger, Honolulu, Hawaii.

Tani Constr. Co., 1083 S. Beretania, Honolulu, Hawaii, LB $232,962 (10 bidders) WAREHOUSE Pier 23, HONOLULU, HAWAII, Oahu Railway and Land Co., 325 N. King St., Honolulu, Hawaii. Awarded June 17.

CANADA

HEAVY CONSTRUCTION—BA

Ont., London—BA 7/15—Ontario Water Resources Comn., East Block, Parliament Bldgs., Toronto, 600,000 g.p.d. activated sludge sewage treatment plant, London Township, Over $100,000. Plans deposit $100. R. C. Dunn & Assocs., Ltd., 410 Third St., engrs.

HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA** — Govt. of British Columbia, Parliament Bldg., Victoria.

Peter Kiewit Sons Co. of Canada Ltd., 1587 W. 8 St., Vancouver, B. C., LB $1,183,892, 2.25 mi. Trans Canada Hy., Dewdney Dist.

Dominion Constr. Co., 1044 Arlington St., Winnipeg, Man., CA $158,000, UNDERGROUND DUCT LINES, hydro electric system, WINNIPEG, MAN. City, City Hall, Winnipeg, Man. Awarded June, 1959.

ONTARIO—Dpt. Highways, Parliament Bldgs., Toronto.
Hi-Way Constr. Co., Ltd., P.O. Box 187, Simcoe, Ont., CA $914,803, 11.06 mi, grading culverts, Hy. 402, Contract 59-82, London. Bids June 17, awarded June 23. CD 6/24, under LB.

ONTARIO—Dpt. Highways, Parliament Bldgs., Toronto.
F. A. Stonehouse & Co., Ltd., Box 295, Sarnia, Ont., CA $594,047, grading, culverts, granular base and hot

(Continued on page 100)

Knuckles right down to any job!

This rugged heavyweight asks no quarter, it just wades right in and polishes off tough hauling jobs. Two high-capacity "live" rear axles give it better flotation and traction on soft ground. And its 234-hp. engine, with dual carburetors standard, gives this T900 tractor the big-chested power to handle the big hauling jobs without tiring.

The new Dodge tandems are packed with features that make heavy-duty hauling easier and more profitable: New instrument clusters, with tachometer and graduated ammeter and oil pressure gauges standard . . . suspended brake and clutch pedals . . . 90-degree-opening hood for easy servicing . . . air brakes standard on T900 models . . . up to 20 speeds forward. But see your Dodge dealer—and get the *heavy-duty* reasons why . . .

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Built throughout for dependable heavy-duty service, this 354-cubic-inch V-8 has dome-shaped combustion chambers . . . double rocker-arm shafts . . . precision timing gears instead of chains . . . positive exhaust-valve rotators . . . hydraulic tappets . . . sodium-cooled exhaust valves. And it develops full power on thrifty *regular* gas!

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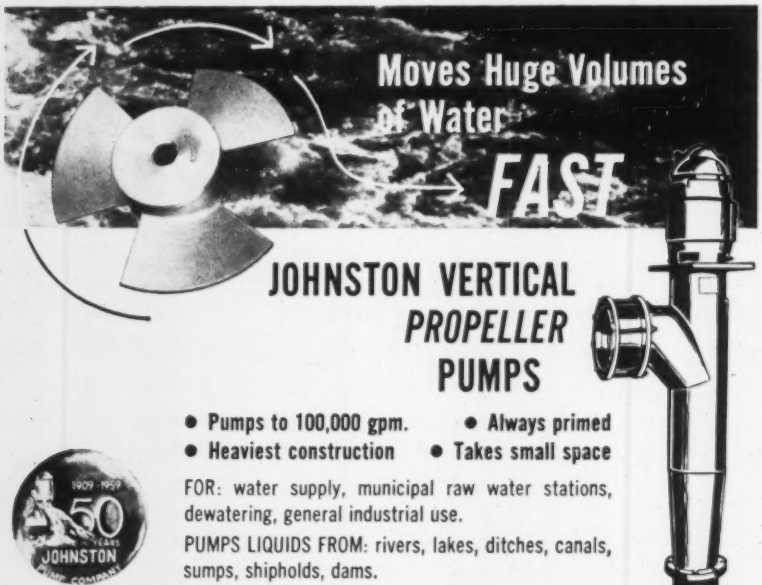
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(Continued from page 98)

mix paving Hy 402 2.03 mi. (Contract 59-125) Sarnia. Awarded June 23. CD 6/26, under LB.

▲ H. J. McFarland Constr. Co., Ltd., Talbot St., Picton, Ont., LB $1,282,077, water services, taxiways, roads and electrical distr. Royal Canadian Air Force Station TRENTON, ONT. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids June 23. CD 6/1.

BUILDINGS—LB & CA

C. A. Johannsen & Son Ltd., 51 Young St., Ottawa, Ont., CA $134,500 (5 bidders) PLANT expansion, OTTAWA ONT. Canadian Bank Note Co., Ltd., 145 Richmond Rd., Ottawa, Ont. Douglas B. Kertland, 36 Summerhill Gardens, Toronto, Ont., archt.

▲ Cunningham Limp Co., 1012 Imperial Life Tower, Toronto, Ont., CA Est. $1,000,000 (8 bidders) 1 story, 112,000 sq. ft. concrete, steel, brick PLANT, warehouse and offices, GRANDBY, QUE. Simonds Canada Saw Co. Ltd., 595 Remi St., Montreal, Que. Awarded June 15.

AMERICANS ABROAD

HEAVY CONSTRUCTION—BA

† Cuba, Guantanamo Bay—BA 8/4—P. Wks. Office, Naval Station, San Juan, Puerto Rico, drilling test water wells, Naval Base, NBy 17930 SP C 17940/59. Extended date. CD 6/5.

PROPOSED PROJECTS

WATER SUPPLY

▲ Colo., Colorado Springs—Dpt. Public Utilities, City Hall, 4 reservoirs 4,750 acre ft., $1,000,000 Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs.

▲ Fla., Miami—Dade Co. Bd. Comrs., Courthouse sewerage system Graves Track (South) U. S. Hy. 1, (West) Dade and Broward Co. Line (North Atlantic Ocean (East) $3,500,000 A. B. Kononoff, 620 NW 32 St., consult. engr. CD 5/28/59.

Hawaii, Bd. Water Supply, Beretania & Alapai, Honolulu, furnish and install water mains and appurtenances, Kailua-Coconut Grove, $110,000; installation only 20 in. water main, Honolulu, $55,000, bids in July; drilling and casing two 18 in. ID water wells, Wahiawa-Oahu, $125,000; materials only for installation 30 in. water mains, Ewa, $200,000, bids in August; 4 million gallon prestressed reservoir, Ewa, $300,000, bids in October; installation of 30 in. water mains, materials furnished by Bd. Water Supply, Ewa, $200,000. E. J. Morgan Bd. of Water Supply, Honolulu.

O., Toledo—Comrs. Lucas Co. Court House, sanitary sewers, Mt. Vernon addn. of Dorr St., west on Dorr to Byrne Rd. and Richards Rd. with laterals south to Hill Ave. $850,000.

▲ Utah, Brigham City—Brigham City Council, City Office, voted bonds May 26, water sys., large reservoir and power plant and 375,000 gal. reservoir. $2,500,000. Neilsen, Reeve & Maxwell, Inc., 429 W. 5th S., Bountiful, engrs. Bids on first phase will open June 22. CD 5/7.

▲ Tex., Odessa—Colorado River Municipal Water Dist., lake for impounding waters upper reaches of Colorado River, near Colorado City. $5,000,000. CD 11/27/50.

SEWERS, WASTE DISPOSAL

▲ Hawaii, Honolulu—City & County of Honolulu, City Hall, 1 unit sewage treatment plant. $1,500,000. Yoshio Konimoto, City Hall, staff engr.

▲ Ill., Quincy—City, City Hall, Div. A, trunk sewer rehabilitation, primarily repair and relining existing brick and rock masonry sewers, $500,000; Div. B, 24 in.-72 in. relief sewers, 8 in. sanitary sewers, $500,000. Warren & Van Praag, Inc., 253 South Park St., Decatur, consult. engr. CD 11/21.

▲ N. Y., Palmyra—Village, Village Hall, sewerage sys. mains, laterals and disposal plant. $1,100,000. Kenneth Woodward, Webster, N. Y., consult. engr. CD 9/9/46.

▲ O., Ravenna—City, City Hall, storm sewers. $1,326,400. Floyd G. Browne & Assoc., Marion, O., consult. engrs.

▲ O., Strongsville—Village, 18688 Royalton Rd., bond election Nov. 3, sewers. $2,630,000. John A. Petsche, 18868 Bennett Rd., Cleveland 33, O., consult. engr.

▲ Wis., Wauwatosa—City, City Hall, 80 x 120 ft., 3-level garbage incinerator plant, 175 ft. chimney, two 165 T capacity furnaces. $1,000,000. Bids soon. Greeley & Hansen, 220 S. State St., Chicago, Ill., consult. engrs. Francis D. Kuckuck, engr. CD 11/17.

STREETS AND ROADS

▲ NEW YORK—Dpt. P. Wks., State Office Bldg., Albany, Orange Co.—5½ mi. north-south arterial hy. (Rte. 9W alternate), Newburgh. $1,500,000. FAI Project.

† Flordia—Indian River Soil Conservation Dist., Vero Beach, Fla., Sebastian River Drainage Dist. Wabasso, watershed protection Sebastian River Drainage 33,930 acres, for Soil Conservation Service. $914,730.

Iowa—Crawford Co. Soil Conservation Dist., Defiance, and Crawford Co. Bd. Supvrs., Denison, watershed protection 7,674 acres, Big Park. $506,323.

† Louisiana—Boque Chitte-Pearl River Soil Conservation Dist., Franklinton, La., watershed protection, Pleasant Valley, Big Ditch and Scarborough Creek, 11,800 acres Washington Parish for Soil Conservation Service. $528,270.

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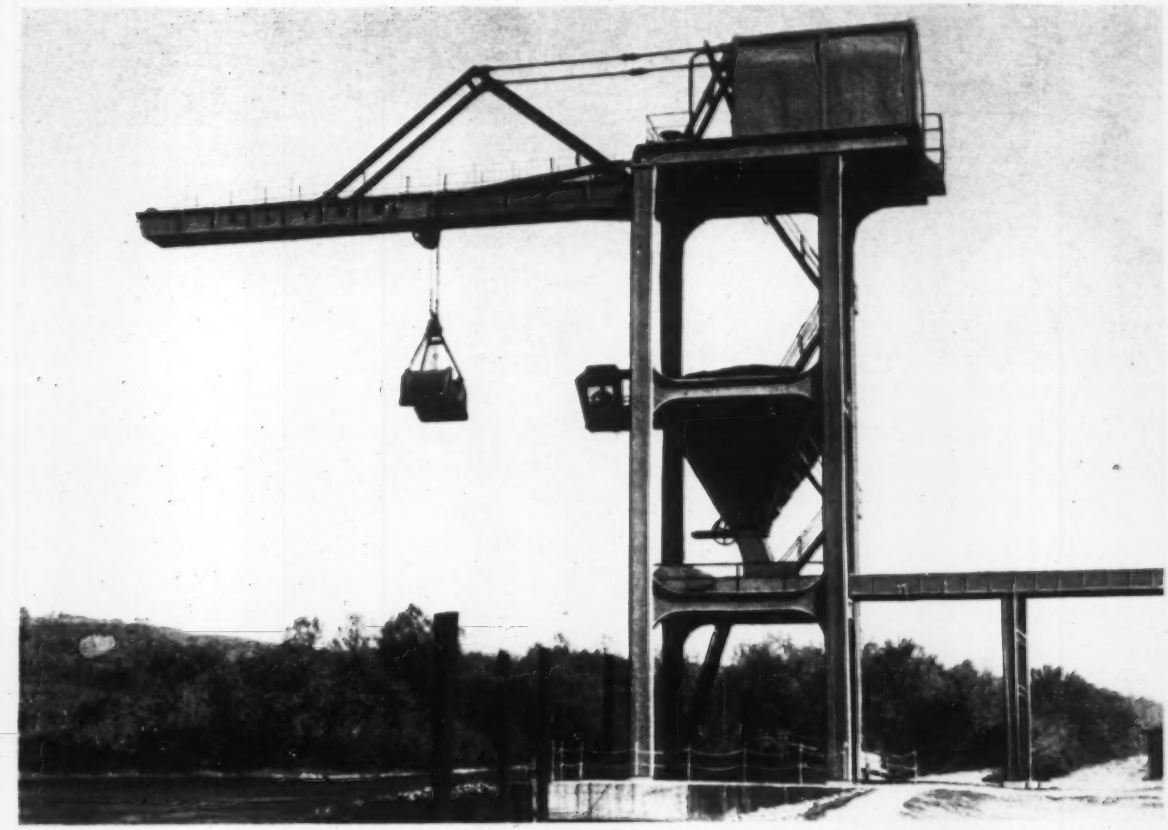

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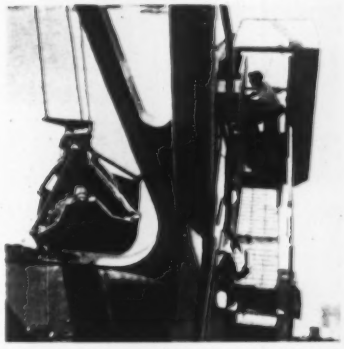

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(Continued from page 100)

▲ **N. J., Paterson**—City, City Hall, dike along Totowa Ave. and pumping station or tunnel below Passaic Falls, $3,000,000. Capen & Sepede, 121 Main St., Lodi, consult. engrs. CD 10/18/45.

▲† **North Carolina**—Pitt Co. Drainage Dist. No. 2, Bethel, N. C., Coastal Plain Soil Conservation Dist., Hookerton, N. C., watershed protection, Grindle Creek, 51,871 acres for Soil Conservation Service. $1,008,695.

AIRPORTS

Conn., Danielson—AIRPORT—State Aeronautics Dpt. Brainard Field, Hartford, 5,000 ft. runway, airport adjacent to Harvard H. Ellis Technical School Maple St., $500,000.

▲ **N. Y., Syracuse**—AIRPORT TERMINAL—City, City Hall, airport terminal. $2,850,000.

PUERTO RICO

▲ **Puerto Rico**—PIPELINE—Pipelines of Puerto Rico, San Juan, 95 mi. 8 in. product pipeline Penuelas to Catino, near San Juan. $1,750,000.

PUBLIC BUILDINGS

▲ **Calif., Santa Cruz**—SCHOOL—Santa Cruz High School, 133 Mission St., voted bonds June 2, Mid-County High School. $2,300,000. John Lyon Reid & Partners, 1019 Market St., San Francisco, archt. CD 4/20.

▲ **Ill., Alton**—HOUSING—Alton Housing Auth., City Hall, plans by Lee Potter Smith & Assocs., Paducah, KY., 100 unit housing, Belle St. $1,579,464. William Flippo, associate archt. CD 12/3.

▲ **Ill., Danville**—SCHOOLS—Bd. Educ., School Dist. 118, 202 E. Fairchild St., plans by Perkins & Will, 309 W. Jackson St., Chicago, and Danville Associated Archts., 20½ W. North St., Danville, three junior high schools. $4,000,000. CD 3/17.

▲ **Ill., Libertyville**—SCHOOL—Libertyville-Fremont Consolidated High School, Park Ave., plans by Berger, Kelley, Unteed & Assocs., 44 Main St., Butler Lake addns., remodeling Brainerd High School. $3,200,000. Bids in early Fall. CD 6/16.

▲ **Ill., Mount Vernon**—HOUSING—Jefferson Co. Housing Auth., Court House, 175 unit low rent housing. $2,000,000.

▲ **Ill., Norridge**—SCHOOL—Norwood Park Twp. High School Dist. 234, 4600 N. Oriole Ave., voted referendum June 16, high school, 14th St. and Oriole Ave. $2,000,000. Orput & Orput, Empire Bldg., Rockford, archts. CD 6/1.

▲ **Ill., Skokie**—SCHOOL—Niles Twp. High School, Niles Ave., voted bonds June 6, Nilehi East and Nilehi West High School expansions. $2,450,000. Orput & Orput, Empire Bldg., Rockford, archts. CD 6/2.

▲ **Me., Bangor**—SCHOOL—City, Supt. Schools, 183 Harlow St., plans by Eaton W. Tarbell & Assoc., Inc., 173 Exchange St., Bangor, senior high school. $3,000,000. CD 5/9.

▲ **Mass., Framingham**—SCHOOL—Town, Lexington St., elementary school, Water St. $1,300,000. Constr. 1960.

▲ **Mich., Utica**—SCHOOLS—Bd. Educ., Utica Community School Dist., voted $2,886,000 bonds June 8, school addns. CD 5/11.

▲ **Miss., Jackson**—SCHOOLS—City, City Hall, 1 story elementary school $1,000,000, 1 story brick elementary school $1,000,000, 1 story brick junior high school $1,000,000, 1 story brick Morrison elementary school addn. $400,000, 1 story brick Hardy Murrah high school addn. $400,000, Isbel elementary junior high school addn. $400,000, 1 story brick school addn. $400,000. CD 4/24.

▲ **Miss., McComb**—SCHOOLS—McComb Municipal Separate School Dist., voted bonds June 9, schools. $1,000,000. CD 5/18.

▲ **N. J., Basking Ridge**—SCHOOL—Bd. Educ. Bernards Twp., plans by Micklewright & Mountford, E. Stuyvesant Ave., Trenton, high school, Bernards Twp., $1,532,000.

▲ **N. J., Hazlet**—SCHOOL—Bd. Educ. Twp. Raritan, referendum on bonds and project Aug. 4, junior-senior high school Pacific Park, North Centerville, Raritan Twp. $1,000,000. Frederic Fessler, 632 Holmdel Rd., archt.

▲ **N. J., North Bergen**—SCHOOL—Bd. Educ. Twp. North Bergen, plans by Fred Wiedersum, 65 Roosevelt Ave., Valley Stream, N. Y., high school, $4,375,000. CD 10/31/57.

▲ **N. J., Summit**—SCHOOL—City, City Hall, plans by Alfonso Alvarez, 204 Bellevue Ave., Upper Montclair, senior high school, Morris Ave. and Kent Place, $2,000,000.

▲ **N. J., Woodbridge**—SCHOOL—Br. Educ. Twp. Woodbridge, plans by Engelhardt, Engelhardt, Leggett & Cornell, 221 W. 57 St., New York, high school, $5,500,000.

N. Y., Jamaica—HEALTH CENTER—Opt. P. Wks., Municipal Bldg., New York, Zone 7, plans by Seelig & Finkelstein, 153 Pierrepont St., Brooklyn 2, N. Y., Proj. HL-59, Jamaica District Health Center addn., alterations, Parsons Blvd. and Jamaica Ave. for Department of Health. $440,000. Blitman & Tichler, 101 Park Ave., New York 17, N. Y., structural engrs. Eugene A. Kaplan, 31 Union Sq., New York 3, N. Y., mechanical engr. To go ahead in 1960. CD 9/10/57.

▲ **N. Y., Penfield**—SCHOOL—Penfield Central School Dist., elementary school. $1,500,000.

▲ **N. Y., Yorktown Heights**—SCHOOLS—Central School Dist. No. 2, plans by Ferrenz & Taylor, 152 W. 42nd St., New York 36, N. Y., high school and elementary school. $4,000,000.

▲† **N. C., Fort Bragg**—HOUSING—U. S. Eng., P.O. Box 1890, Wilmington, plans by Lyles, Bissett, Carlisle & Wolff, 1321 Bull St., Columbia, S. C., 367 units Capehart housing. $6,000,000. CD 9/29.

▲ **N. C., Raleigh**—CLASSROOM BLDG.—North Carolina State College, Hillsboro St., plans by Holloway & Reeves, 714 St. Marys St., classroom bldg., $1,000,000. CD 2/17.

▲ **O., Kettering**—SCHOOLS—Bd. Educ., junior high school, east side, $1,400,000; elementary school, southeast section, $400,000. CD 11/12/57.

▲ **O., Maple Heights**—SCHOOLS—Bd. Educ. 5500 Clement St., junior high school, $1,200,000; high school addn., $500,000.

▲ **Ore., Eugene**—SCIENCE—State Bd. Higher Educ., University of Oregon, Eugene, plans by Lawrence, Tucker & Wallmann, Failing Bldg., Portland, science expansion, University of Oregon, $2,260,282. Cooper & Rose, Builders Exchange Bldg., Portland, consult. engrs. CD 4/3/58.

▲ **S. C., Lake City**—HOUSING—Lake City Housing Auth., plans by James M. Hunt, 16 Chestnut St., Elberton, Ga., 102 units housing Projs. SC-18-1A, SC-18-1B and SC-18-2, maintenance bldg. etc. $1,000,000. Beeson Engrg. Co., Liberty, consult. engrs. CD 10/22.

▲ **Tenn., Memphis**—TURBINE GENERATOR—Memphis Light, Gas & Water Div., City of Memphis, P.O. Box 388, 250,000 kw. turbine generator addn. Allen Steam Plant. $40,000,000. Burns & Roe Inc., 160 W. Broadway, New York, N. Y., consult. engr. CD 8/26/55.

▲ **Tex., Fort Worth**—CRIMINAL COURTS—Tarrant County, Courthouse; 3 story masonry, concrete, steel criminal courts addn. and 8 story wing. $1,000,000.

▲ **Tex., Houston**—SCHOOLS—Houston Ind. School Dist., 1300 Capital St., plans by Lloyd & Morgan, Nunn, Nunn & Ulbrecht & Eugene Werling, 4605 Montrose Blvd. (jointly exec. archts.) and Milton McGinty, 2425 Ralph St. and Harvin C. Moore, 2006 W. Alabama St., co-ord. archts., senior high school, Scott St. and Reed Rd. $3,500,000; senior high school, Richmond, Hillcroft, Beverly Dr. $2,750,000; senior high school Chimney Rock Rd. and Gaston Dr. $2,750,000; CD 6/12, plans by John Freeman Jr. and Travis Broesche & Assocs., & Lewis A. McGuire (jointly) 3271 W. Alabama St., Elementary School, Bellfort Dr. and Comal St. $500,000; elementary school, Oak Hill and Westover St. $450,000. CD 5/21.

▲ **Tex., Marshall**—City, streets improv. and paving $1,000,000. CD 5/3/55.

▲ **Tex., Sugarland**—SCHOOL—Ft. Bend Consolidated Ind. School Dist., high school, between Missouri City and Sugarland. $1,250,000.

(Continued on page 104)

The world-wide respect and demand for this original Miller gas engine driven welder/power plant has never been greater. To this established popularity has now been added the convenience of Bendix drive electric starting as optional equipment on models AEA-200-L and AEA-200. Model illustrated and headlined is AEA-200-LE.

As a welder, as a power plant, as a pipe thawer, indeed, as a top hand from Canadian uranium mines to Brazilian cattle ranches — and on highway construction jobs and repair ships between — the AEA-200-L stands quite alone as "the finest in the field." In addition to optional electric starter, road trailers and rubber tired running gear are also available.

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65,000 tons of Macadam base through this P-160 without downtime!

Amis Construction averages 600 TPH with 15% more compaction

"We selected the Blaw-Knox P-160 Base Paver attachment because of superior design features like the oscillating screed and wide-spread wheels. Since we began using it in July, we've put down more than 65,000 tons of Macadam base course with water binder, without any downtime or maintenance difficulties," says John R. Waugh, project manager for the Amis Construction Company, Oklahoma City, Oklahoma.

"We've experienced a big reduction in equipment requirements over our previous method of spreading with blades. The V-type hopper eliminates the material segregation problem. And the real extra feature on the Blaw-Knox P-160 is the oscillating screed that knits the material in place. That gave us the extra compaction that permits our roller operators to work without fear of pushing the base course before the rollers. It's an important feature when matching adjoining passes too," he adds.

Specially engineered—rugged Blaw-Knox paving equipment like the P-160 Base Paver attachment enables contractors all over America to keep ahead of contract obligations, at a profit. If you would like a technical report on Amis' experience with the P-160, check your Blaw-Knox distributor. Or you may wish to write direct.

BLAW-KNOX

BLAW-KNOX COMPANY

Construction Equipment
300 Sixth Avenue
Pittsburgh 22, Pennsylvania

(Continued from page 102)

COMMERCIAL BUILDINGS

▲ **Ariz., Tucson**—APARTMENT—Lyle R. Palant Co., c/o Phoenix Title & Trust Co., T & T Bldg., Phoenix, 80 unit apartment, 7250-7340 N. Oracle Rd., Ina Rd., $1,000,000.

▲ **Ark., Forrest City**—DWELLINGS, SHOPPING CENTER—Rector-Phillips-Morse, Inc., 312 W. Capitol St., Little Rock, and William Fogg, E. J. Butler and Jack Bridgeforth, Forrest City, plans by Edward G. Smith & Assocs., archts. and engr., 401 Victory St., Little Rock, 850 dwellings and adjacent shopping center, $9,500,000.

▲ **Calif., Millbrae**—BOWLING ALLEY—Harold Dobbs, 351 California St., San Francisco, 40 lane bowling alley, Kings Bowl, El Camino Real, $1,500,000.

▲ **Calif., Millbrae**—BOWLING ALLEY—C. A. Rolfey, City Hall, 22 lane bowling alley near Millwood Motel near El Camino Real, $1,000,000.

▲ **Calif., Redwood City**—CHURCH, etc.—Mt. Averono Provincial House & Novitiate of Penance & Christian Charity of Sisters of St. Francis of Mt. Averno, 240 Wilson Ave., Sierra Madre, plans by Gene Verge & R. N. Clatworthy, 4342 Eagle Rock, Los Angeles, 4 levels, 60 x 350 ft. cross shaped concrete church and convent, 38 acre site, Farm Hills, $3,000,000.

▲ **Colo., Denver**—OFFICE—Terrydale Corp., 4452 Main St., Kansas City, Mo., 4 story, 50,000 sq. ft. OFFICE 101 University Boulevard Building, $1,500,000.

▲ **Conn., Brookfield**—BUSINESS CENTER—Topstone Development Corp., Topstone Dri. Danbury, 400,000 sq. ft. business center, Gray's Bridge Road, $4,000,000.

▲ **Conn., Danbury**—HOTEL—A. O. Samuels, 706 Bostwick Ave., Bridgeport, hotel, 198 Main St., $1,000,000.

▲ **Conn., Manchester**—HOUSES—Frank R. Wood, 150 S. Lakewood Circle, 180 houses, Keeney St. $1,800,000.

▲ **Conn., Stratford**—MOTEL, etc.—Investors Mortgage Co., Agt., 171 State St., Bridgeport, 75-unit motel and restaurant, Main St., $1,000,000.

▲ **Conn., Stamford**—APARTMENT—Morgan Manor, Inc., 1122 Main St., plans by Philip Birnbau, 12 E. 48 St., New York, N. Y., 11 story, 119 family apartment, Morgan St., $1,250,000.

▲ **Fla., Fort Lauderdale**—APARTMENT—Castilla Investment Corp., 600 N. Birch Rd., plans by C. F. McKirahan, 2400 E. Oakland Park Blvd., 17 story 62 x 150 apartment, Terramar St. and Birch Rd., $2,000,000. D. E. Britt & Assocs., 309 S.E. 9 Ave., structural engrs.

▲ **Fla., Tampa**—SHOPPING CENTER—A. F. Johns, 201 Linda Ave., 300,000 sq. ft. shopping center, $5,000,000.

▲ **Ill., Chicago**—RESEARCH BLDGS., etc.—University of Chicago, 5801 Ellis Ave., research bldgs. addn. Div. of Biological Sciences, $10,000,000; School for Business, 60th and Woodlawn, $3,000,000; men's residence hall, 55th and Greenwood, $2,400,000; married students apartments, South West Hyde Park, $2,500,000; William Rainey Harper Memorial Library, $1,500,000; book store, $750,000; Public Admin. Center addn., 1313 E. 60th St., $500,000.

▲ **Ill., Chicago**—SHOPPING CENTER—Finitzo Bros., 5444 S. Archer Ave., plans by Sidney H. Morris & Assocs., 134 N. La Salle St., 43,000 sq. ft. Ridge Shopping Center, parking lot, Archer Ave. 7, Mayfield Ave., $1,000,000.

▲ **Ill., Wheaton**—HOSPITAL—Central DuPage Hospital Assn., plans by Samuel I. Oshiver & Assocs., 1913 Walnut St., Phila., Pa., hospital, $1,500,000. Bids Aug. or Sept.

▲ **Ind., Indianapolis**—APARTMENT—Cold Springs Manor, Inc., c/o Fleck, Quebe & Reid Assocs., archts., 1637 N. Illinois St., 8 story, 78-unit cooperative apartment, $1,500,000.

▲ **Ind., Indianapolis**—APARTMENTS—Owner, c/o John G. Harris, 618 E. 46 St., apartments, 6125 E. 46 St., $1,500,000.

▲ **Ky., Lexington**—DEPARTMENT STORE, etc.—H. G. Whittenberg, 2214 S. Floyd St., Louisville, Ky., department store and garage, $2,500,000.

▲ **La., New Orleans**—DORMITORY, etc.—Loyola University, 6363 St. Charles Ave. (La.-CH-25DS), women's dormitory (for 400), 30 faculty family units and student center and cafeteria, $2,809,000.

▲ **N. J., Atlantic City**—MOTEL, etc.—Shelborne Hotel, Michigan Ave. and Boardwalk, plans by Rodney C. Williams, 9 S. Granville Ave., Margate, 150-unit motel, swimming pool, ice skating rink, Pacific and Ohio Aves., $2,000,000. Bids soon.

▲ **N. J., Marlboro**—HOUSES—Webb & Knapp, 385 Madison Ave., New York, 2,000 houses, Pleasant Valley, Rte. 34, Marlboro Twp., $20,000,000.

▲ **N. J., Toms River**—SHOPPING CENTER—Owner, c/o Harold Glucksman, archt., 850 Broad St., Newark, shopping center, Rte. 27, Dover Twp., $1,000,000.

▲ **N. Y., New York**—LIBRARY—New York Botanical Garden, 22 E. 60th St., New York, Zone 22, plans by Eggers & Higgins, 100 E. 42nd St., New York 17, N. Y., library addn. to Museum and Administration Bldg., New York Botanical Garden, $1,000,000. CD 11/10/47, under Unclassified.

▲ **N. Y., New York**—OFFICE, etc.—Webb & Knapp, Inc., 270 Park Ave., New York 17, plans by Harrison & Abramovitz, 630 Fifth Ave., New York 20, N. Y., 37 story office and apartment E. 48th St. E. 49th St., First Ave. and F.D.R. Drive, $25,000,000.

▲ **Tex., Houston**—OFFICE—Realty Mortgage Co., Bank of Southwest Bldg., plans by Kenneth Benson, 10118 Woodwind St., 4 story office Polk and Fannin Sts. $1,000,000.

▲ **Wash., Spokane**—DEPARTMENT STORE—Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill., 208,000 sq. ft. department store, $2,000,000.

▲ **Man., St. James**—HOSPITAL—The Salvation Army, 20 Albert St., Toronto, Ont., 500-bed general hospital, Portage Ave., $7,500,000.

INDUSTRIAL BUILDINGS

Conn., East Hartford—PLANT—Aetna Sheet Metal Works, Inc., 16 Orchard St., 50,000 sq. ft. plant and office, $500,000.

Ky., Louisville—PLANT—Kentucky Metal Products Co., 3104 S. Preston, Louisville, plans by Arthur Tafel, Jr., 310 Liberty St., Louisville, Ky., plant, Schaff Lane off Newburg Rd., $500,000. Carr-Roy & Assoc., 304 W. Liberty St., Louisville, Ky., consult. engrs.

▲ **N. Y., New York**—PARKING GARAGE—U. S. Parking Corp., 120 Broadway, New York, Zone 5, will not construct 10 story parking garage, Whitehead St. from Bridge to Stone Sts., $2,000,000. Project abandoned. CD 3/10.

N. C., Enka—PLANT OFFICE—American Enka Corp., 530 5th Ave., New York, N. Y., plans by Six Associates, 1095 Hendersonville Rd., Asheville, plant office, $600,000. CD 12/11/58.

▲ **Tex., Denison**—PLANT, etc.—Texas Power & Light Co., Fidelity Union Life Bldg., Dallas, electric generating power plant S.E. of here, $12,000,000; 138,000 volt electric transmission lines to connect with plant, $2,000,000; area earthwork, grading, filling, leveling, $75,000; area lighting, paving roads, drainage, $100,000; water sys., $80,000.

▲ **Tex., Mount Vernon**—PLANT, etc.—Tidewater Oil Co., M. Esperson Bldg., Houston, 50,000,000 cu. ft. gas daily cap. natural gasoline plant, $10,000,000; 4 for production and 4 for gas reinjection wells, $300,000; cycling plant units, $1,000,000; sulphur recovery plant unit (224 long tons sulphur daily cap.), $1,000,000, near here.

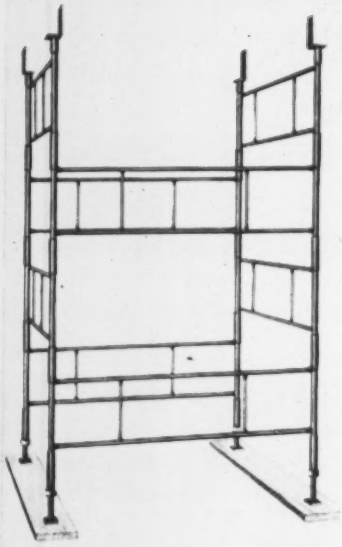
UNCLASSIFIED

▲† **Conn., Groton**—BARRACKS—U. S. Naval Submarine Base, P.O. Box 400, New London, plans by Pedersen & Tilney, 119 Whitney Ave., New Haven, 8 barracks, $1,000,000. CD 9/6/58.

▲ **Tennessee**—GAS SERVICE LINES—East Tennessee Natural Gas Co., Kingston Pike, Knoxville, gas service lines to Newport, White Pine and Jefferson City, Jefferson Co., $1,000,000-$1,500,000.

Save on Your Next Shoring Job with the New SELF-LOCK System

IT'S SPEEDY, SIMPLE, STURDY, SAFE



Special notched frames that quickly slip-fit together are the key to this revolutionary new shoring system.

No nuts, bolts, pins or other fastening devices needed. *No tools are required.* Free standing towers of any height can be *erected in one-foot increments* using combinations of 2 and 3 foot frames.

The simple, flexible Self-Lock System consists of three basic units; rugged, lightweight frames of welded steel tubing; ledger carriers and shoring jacks.

Self-Lock frames can also be planked and used as scaffolding during erection and dismantling of towers to eliminate the need for separate scaffolding. They stack compactly, transport easily—can be re-used on job after job.

Complete shoring tower with jacks and ledger carriers in place. Patented frame design eliminates usual cross-bracing.

SEND TODAY FOR FULL DETAILS

Unique slip-fit joint speeds assembly. Exclusive notched frames automatically assure self-locking, self-aligning towers. Load is carried by vertical members.

VEGA INDUSTRIES, INC.

VEGA INDUSTRIES, INC.
607 E. Brighton Avenue
Syracuse 5, New York

Please send complete information on the new Self-Lock Shoring System.

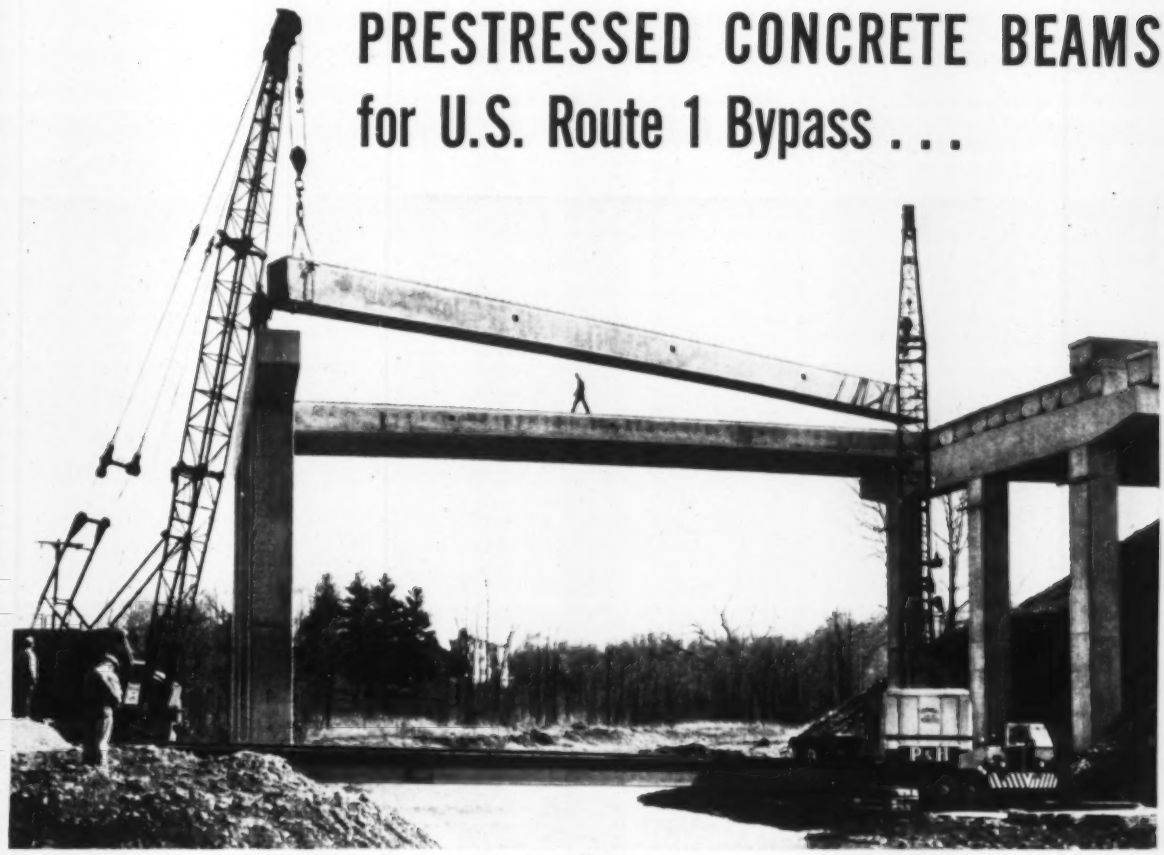
Company Name .....

Street .....

City ..... State .....

Attention .....

PRESTRESSED CONCRETE BEAMS for U.S. Route 1 Bypass . . .



Cranes lower prestressed concrete beam 95′ long, 4′ square, and weighing 58 tons, onto piers of one of the middle spans of the 4-span Ridley Creek Bridge. There are 16 beams per span. Note "railway" across creek at bottom of picture, used to trolley one end of beam across creek to crane at right.

• Ridley Creek Bridge, pictured here, is one of seven bridges required in the 8 mile long bypass around Media, Pa. Over 400 prestressed box beams, ranging in length from 40′ to 95′, were used in these structures.

Factors influencing the choice of this modern bridge construction technique were low initial and maintenance costs, ease and speed of erection, and the trim appearance of prestressed concrete.

In manufacturing the prestressed beams for these bridges, Atlantic Prestressed Concrete Company used Lehigh Early Strength Cement for maximum production efficiency. Units were completed quickly, ready for trucking to the job site as needed.

This is another example of the advantages of Lehigh Early Strength Cement in modern concrete construction.

General Contractor:
Glasgow, Inc.
Glenside, Pa.

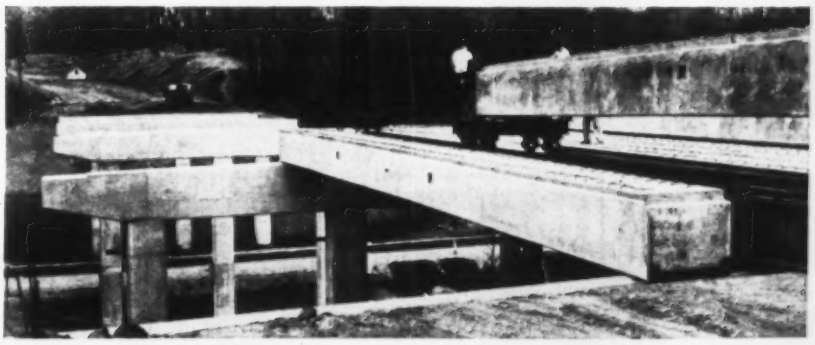
Contractor for Construction of Bridges:
McClain Construction Co., Inc.
Philadelphia, Pa.

Manufacturer of Prestressed Beams:
New Castle, Del. Plant,
Atlantic Prestressed Concrete Co.
Trenton, N. J. (wholly-owned Subsidiary of Warner Co., Philadelphia, Pa.)

Ready Mixed Concrete for Beams Supplied By:
Warner Company
Philadelphia, Pa.

LEHIGH PORTLAND CEMENT COMPANY

Allentown, Pa.



Placing one of shorter beams for end span at Ridley Creek. Mobile crane (out of picture to right) is moving beam on rail dolly out to meet crane stationed on creek bed below. The two cranes then move beam to final position.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

July 20 Connecticut

STREETS AND ROADS

July 13, 20 Connecticut July 14 Massachusetts July 15 Maine

HEAVY CONSTRUCTION—LB & CA

▲† **Consolidated Constructors, Inc.**, 807 Congress St., Portland, Me., LB $1,609,799, est. $750,000-$1,000,000, Schedules 1 & 2, GAM 77,GAM 72, facilities, Dow Air Force Base, Gangor and Loring Air Force Base, Limestone, ENG-19-016-59-140, MAINE. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Gilbert Small & Co., Inc., 10 State St., Boston, Mass., engr. Bids June 26. CD 6/1.

BUILDINGS—LB & CA

▲ **Wexler Constr. Co., Inc.**, 118 Needham St., Newton Highlands, Mass., CA Est. $2,000,000, MEDICAL BLDG., HANOVER, N. H. Trustees Dartmouth College, 105 Parkhurst Hall, Hanover, N. H. Bids June 18. CD 6/5.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

July 14 Maryland July 24 Pennsylvania

STREETS AND ROADS

July 14 Maryland July 16 New Jersey July 24, 31 Pennsylvania

▲ **Pa., Phila.**—BA 8/18—Water Dpt., City Hall Annex, Room 313, Wakeling St., relief sewer, storm-water conduit and relay of water main in Vankirk St. between Delaware River and Edmund St., Bid No. 2331 Work No., S-3502; adv. ENR 7/9. CD 11/9.

BUILDINGS—BA

▲ **N. J., Atlantic City**—CONVENTION HALL IMPRVS. —BA 7/16—Dpt. P. Wks., City Hall, convention hall imorvs. $2,000,000. Plans deposit $75. Carroll Grisdale & Van Allen, 1621 Chestnut St., Phila., Pa. archts. Day & Zimmerman, Inc., 1700 Sansom St. Phila., Pa., engr. CD 4/29/58.

HEAVY CONSTRUCTION—LB & CA

▲† **Danish Arctic Contractors**, 271 North Ave., New Rochelle, N. Y., CA $4,050,020 (a) Avgas base storage (CY-59) (b) base bulk supply warehouse facility addn. (CY-59) (c) base theater (CY-59) (d) bread bakery (CY-59) (e) eastern extension Dew Line Support Facilities (CY-59) (1) composite bldg. (CY-59) (2) 70-men dormitory (CY-59) (3) garage (CY-59) (4) bulk fuel storage (CY-59) (5) radio communications bldg. (CY-59) at Sondrestrom Air Force Base, (BW-8) ENG-30-347-59-28, GREENLAND. U. S. Eng., 346 Broadway, New York, N. Y., U. S. A. Bids June 11. CD 6/18, under LB.

▲ **Slattery Contg. Corp.**, 46-36 54th Rd., Maspeth, N. Y., CA $5,616,000, IRT Express Station at E. 59th St. and Lexington Ave., NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids June 5. CD 6/9, under LB.

▲ **Frederick Constr. Co.**, Frederick, Md., CA $1,574,064 Naval Airforce Facilities (first increment) NARTU hangar, Towers Field, ENG-49-07-59-62(59), ANDREWS AIR FORCE BASE, MD. U. S. Eng., First and Douglas Sts. N. W., Wash., D. C. Bids June 18. Grand total $2,988,064. CD 6/24, under LB;
F. D. Rich Co., 550 Summer, Stamford, Conn., CA $594,000, central heating plant, Towers Field (Andrews Air Force Base, Md.);
E. C. Ernst, Inc., 1622 14th St. N. W., Wash., D. C., CA $820,000, electrical distr. sys. Towers Field (Andrews Air Force Base, Md.).

BUILDINGS—LB & CA

▲ **Taylor-Metropolitan Constr. Co.**, 420 Lexington Ave., New York, N. Y. Owner Builds, $3,500,000, 17 story, 200-unit APARTMENT, Prospect St., EAST ORANGE, N. J., CD 8/19, under Peter F. Fasberg & Assocs., as owners.

▲ **Beacon Constr. Co.**, 102 Hand St., Boston, Mass., CA $3,500,000, Colonial Park SHOPPING CENTER, Colonial Rd., HARRISBURG, PA. Food Fair Properties, Inc., 355 Lexington Ave., New York, N. Y. Bids Mar. 17. CD 3/13.

▲ **Myers Planning & Constr. Co.**, 1801 N. Front St., Harrisburg, Pa., CA $2,000,000, 10 story OFFICE, Front and Maclay Sts., HARRISBURG, PA. Riverside Corp., 1801 N. Front St., Harrisburg, Pa. R. I. Weaver, 44 S. 28th St., Penbrook, Pa., archt.

▲ **Remarc Bldg. Corp.**, 1135 N. 6th St., Harrisburg, Pa., CA $2,500,000, two 19 story, 180 unit APARTMENTS, redevelopment area, 7th and Boas Sts., HARRISBURG, PA. Capitol Housing Corp., 2 Park Ave., New York, N. Y. John H. Graham, 2,000 K St. N. W., Wash., D. C., archt. CD 5/26/57.

▲ **General Electric Co.**, River Rd., Schenectady, N. Y., CA Est. $4,500,000, electrification BLOOMING MILL, Midland Works, MIDLAND, PA. Crucible Steel Co., Midland, Pa.

▲ **Jaret Co.**, 1523 Farmers Bank Bldg., Pittsburgh, Pa., Separate Contracts, $6,000,000, 200 1 story, bsmt., brick HOUSES, MOUNT LEBANON, PA.

▲ **Aberthaw Constr. Co.**, 60 State St., Boston, Mass., CA $3,000,000, HEADQUARTERS BLDG., VALLEY FORGE, PA. American Baptist Convention, 3701 Chestnut St., Phila., Pa. Vincent G. Kling, 917 Corinthian Ave., Phila., Pa., archt. CD 7/9/58.

▲ **R. A. Prendergast & Sons**, 3010 Sunset Ave., Atlantic City, N. J., LB $2,312,611 (8 bidders), Gunning Bedford JUNIOR-SENIOR HIGH SCHOOL, DELAWARE CITY, DEL. Gunning Bedford School Dist., St. George's St., Delaware City, Del. Bids June 24. CD 6/10.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

July 14 West Virginia

STREETS AND ROADS

July 14 West Virginia

HEAVY CONSTRUCTION—LB & CA

▲ **FLORIDA**—State Rd. Dpt., Municipal Anditorium, Bayfront Park, Miami.
Allen M. Campbell, Box 836, Tyler, Tex., CA $1,857,034, 6-lane divided 9 in. plain c. conc., 8 in. c. conc. and 10½ in. limerock base Type 1 B, conc. surf. course and binder course, etc., between point west of Rio Grande Ave. and 27 St. south of Orlando City Limits, FAI Proj. I-4-2 (16) 98, Job No. 75280-3415 SR 40, Orange Co. Bids May 22, awarded June 24. CD 5/28, under LB.

▲ **FLORIDA**—State Road Dpt., Tallahassee.
Troup Bros., Inc., Box 168, Miami 33, Fla., CA $2,183,173, 4-lane dual roadway facility with interchanges 1.505 mi. SW 8 St. (Tamiam Trail) and West Flagler St., SR 826 (Palmetto Rd.), from S. W. 14 St. north to point new N. W. 8 St., State Proj. Job No. 87260-3503, Dade Co. Bids Jan. 29, awarded June 25. CD 2/3, under LB.

BUILDINGS—LB & CA

▲ **King-Hunter Constr. Co.**, 1421 Westover Terrace, Greensboro, N. C., LB $1,567,882, general contract HOSPITAL, GREENSBORO, N. C. Wesley Long Community Hospital, 338 N. Elm St., Greensboro, N. C. Bids June 23. CD 6/8.

REDA SUPPLIES 21,000 GALLONS OF WATER PER HOUR

for Kimbell Food Products Co. Fort Worth, Texas

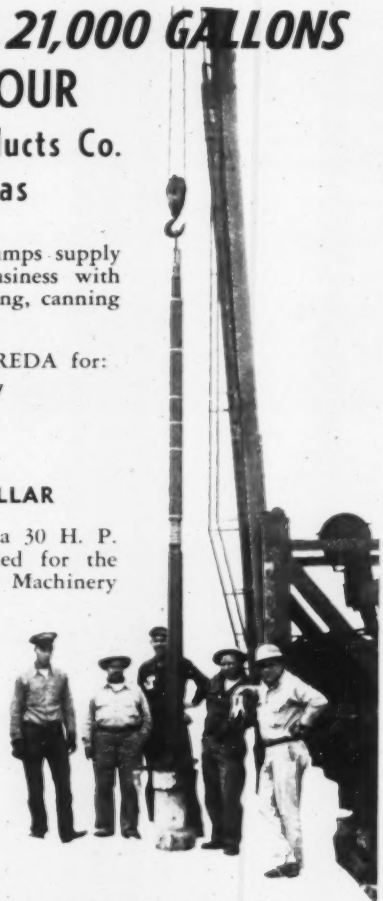
Three Reda Submergible Pumps supply this well known Ft. Worth business with plenty of water for food processing, canning and bottling operations.

The Kimbell people chose REDA for:

- **Dependable water supply**
- **Low Maintenance Cost**
- **Low Installation Cost**
- **Low Operating Cost**
- **MORE WATER PER DOLLAR**

The installation pictured is a 30 H. P. Reda unit, one of three installed for the Kimbell Company by the Well Machinery & Supply Co. of Ft. Worth.

INSTALLATION DATA:
PUMPING DEPTH: 452 ft. (water pumped to tower 110 ft. high)
CASING: 10-inch steel casing
POWER REQUIRED: 440 volts a. c., 3 phase, 60 cycle
MAXIMUM WATER REQUIREMENTS: 210,000 gallons per day
WATER SUPPLIED BY REDA: 21,000 gallons per hour
PUMPS INSTALLED: 30 H. P. Reda unit supplying 150 g.p.m.
22½ H. P. Reda unit supplying 100 g.p.m.
20 H. P. Reda unit supplying 100 g.p.m.



Reda Submergible Pumps are manufactured in a complete range of sizes from ⅓ to over 300 H. P., with capacities from 5 to over 1000 gallons per minute, from depths as great as 10,000 feet.

Contact Reda TODAY for Submergible pumps to meet your requirements!

SIGN OF QUALITY SUBMERGIBLE REDA PUMPS

REDA PUMP COMPANY

BARTLESVILLE, OKLAHOMA

Manufacturers of submergible motors and pumps for over 35 years — for oil, brine and water wells, gasoline and jet fuel

W. H. Sullivan Co. 4413 W. Market St., Greensboro, N. C., LB $444,000, heating contract, HOSPITAL (Greensboro, N. C.).

▲ Fish Engineering Corp., M & M Bldg., Houston, Tex., CA Approx. $2,000,000, design and construct, Carbon Black PLANT addn., LAKE CHARLES, LA. Continental Carbon Co., Westlake, La. (Continental Carbon Co., 1 Briar Dale Court, Houston, Chamrock Oil & Gas Corp., First National Bank Bldg., Amarillo, Tex. and Witco Chemical Corp, 122 E. 42nd St., New York, N. Y.).

▲ Tennessee Eastman Co. (Div. Eastman Kodak Co.) Kingsport, Tenn., Owner Builds, Total cost $60,000,000, POLYESTER FIBER PLANT, KINGSPORT, TENN. CD 7/2/58.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲† Wis., Kansasville—HOSPITAL—BA 7/27—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill., hospital, Richard I. Bong Air Force Base, ENG-11-032-59-101. $2,000,000. Plans deposit $25. CD 6/18.

HEAVY CONSTRUCTION—LB & CA

▲ Santucci Constr. Co., 502 S Church St., Skokie, Ill.; LB $3,900,000, est. $4,750,000, (10 bidders) Spec. 80-391-58-3, Columbus Water Works, Columbus Ave. tunnel, 14,000 ft., 12 ft. clear ht. conc. 73rd St. and Western Ave. to 84th St. and Kedvale Ave. CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids June 26. CD 5/27.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
July 16 Kansas July 21, 22 Texas
STREETS AND ROADS
July 21, 22 Texas

BUILDINGS—SLC

▲ N. D., Minot—HOSPITAL—St. Joseph Hospital, 4th Ave. and Third St. SE, soon lets contract 5 story, 46 x 200 ft. hospital addn. $2,250,000. Hills, Gilbertson & Fisher, 6009 Wayzata Blvd., Minneapolis, Minn., archts. CD 5/27.

HEAVY CONSTRUCTION—LB & CA

▲† Ferber Co., 16 Johnson Ave., Hackensack, N. J., LB $2,123,512, est. $2,185,000, 2 Nike-Hercules facilities each in 3 above ground launching pads, missile assembly bldg., 2 electric generator bldgs., personnel ready bldg., etc., 2 combined NCO and officers' quarters, etc., Schilling Air Force Base, ENG-23-028-59-66, SALINA, KAN. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids June 18. CD 5/20.

▲† Blaw-Knox Co., 300 6th Ave., Pittsburgh, Pa., LB $6,938,450, est. $9,187,300 (5 bidders) Missile Complexes D, E, F, G, H & I, work at each site, incl. launch operations bldg., launch and service bldg., roads, utilities and site work, near Forbes Air Force Base, ENG-23-028-59-72, TOPEKA, KAN. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids June 26. CD 6/4.

▲† Lawless & Alford, Inc., Box 600, Austin, Tex., LB $1,952,773 (6 bidders), Nike-Hercules Facilities incl. 2 identical facilities on 2 different sites, over 10 separate masonry type bldgs., Bergstrom Air Force Base, ENG-41-243-59-80, AUSTIN, TEX. U. S. Eng., Box 1229, Galveston, Tex. Bids June 25. CD 6/16.

BUILDINGS—LB & CA

▲ Wilshire Contractors, Inc., 8814 Sunset Blvd., Los Angeles 46, Calif., LB $4,841,000, 304 units CAPEHART HOUSING, Grand Forks Air Force Base (No. 2), IFB 32-605-59-24, GRAND FORKS, N. D. Base Procurement Office, Grand Forks Air Force Base, Grand Forks, N. D. Bids May 26. CD 4/27.

▲† Sunset Contractors, Inc., 8814 Sunset Blvd., Los Angeles, Calif., CA $3,556,312, 220 unit Capehart HOUSING, Ellsworth Air Force Base No. 1, RAPID CITY, S. D. Base Procurement Office, Ellsworth Air Force Base, Rapid City, S. D. Bids May 26. CD 6/2, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
July 23 California
STREETS AND ROADS
July 22, 23 California

▲ Idaho, Boise—BA 7/24—Bd. Directors, Bench Sewer Dist., Ada Co., 407 North Orchard St., Schedule P, approx. 37 ft. long, 14 ft. wide, 20 ft. deep, concrete pretreatment station; Schedule S, approx. 4,175 ft. dual 10 in. and 27 in. Garden City pressure interceptor sewer, 2 concrete beam supported overcrossings of irrigation ditches, highway undercrossing, connection to City of Boise sewage treatment plant, and misc. appurtenances; Schedule M, approx. 1,700 ft. 30 in. Americana pressure interceptor sewer, Parshall flume flow measurement station, undercrossing of Ann Morrison Memorial Park

Dick Ground
Master Mechanic for Austin Paving Co., Dallas, Texas, in charge of repairs for over 100 units of construction equipment

"I've used other make parts on engine overhauls and they did not hold up and wear as long as genuine Cat parts. My feeling is, if you buy substitute parts, you soon have a substitute machine."

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☐ Engineering Projects (Heavy Construction)

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Company_____
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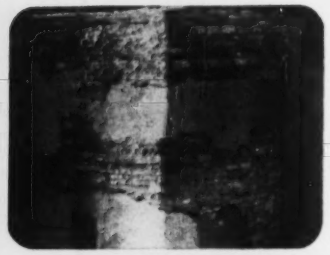
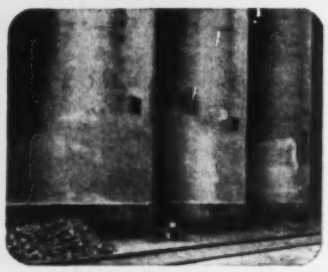
City_____ Zone_____ State_____

Dodge Reports
For Timed Selling to the Construction Industry

THORITE and THOROSEAL repaired these Silos and made them waterproof!



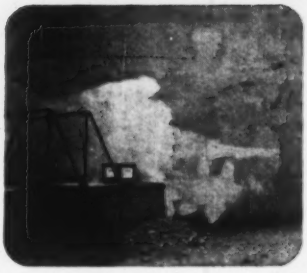


CAUSE

The freeze-thaw cycle caused extreme damage to the masonry of these silos. Heavy cement surfacing deteriorated, exposing brick and mortar, vulnerable to water.

CORRECTION

All loose and scaling concrete was thoroughly removed by use of wirebrush, hammer, chisel or sandblasting. Reinforcing mesh was then locked to the exposed brick, over which THORITE, a twenty-minute set patching compound, was troweled, bringing the surface level with surrounding concrete. Immediately after, the THORITE patch and all silo masonry surface was sealed with brush coat of THOROSEAL to protect the entire structure.



Opposite photo shows huge crevices caused from deterioration and would ordinarily require forming into which concrete would be poured. THORITE eliminates this costly procedure. THORITE does not slump and can be formed by trowel to any contour of surrounding surfaces, as shown in these opposite pictures.

ALL ABOUT THE THORO SYSTEM

Write for our New 20 page brochure!

Standard Dry Wall Products Inc.

NEW EAGLE, PA. CENTERVILLE, IND.

entrance, and misc. appurtenances. Plans deposit $25. Cornell, Howland, Hayes & Merryfield, 628 Idaho Bldg., engrs. and consultants. CD 9/3.

BUILDINGS—BA

▲ **Calif., Ventura**—SCHOOL—BA 7/29—Ventura Union High School Dist., frame, stucco, rein.-con., steel Senior High School No. 2. $3,000,000. Wilson, Strohm & Wilson, 1401 Say Rd., Santa Paula, archts. CD 4/8.

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,

A. Teichert & Son, Inc., 1931 Stockton Blvd., Sacramento, Calif., CA **$2,083,222**, interchanges, crossing structures, widening U. S. Hy. 40 to convert 4.4 mi. from 4 lane expressway to 6 lane freeway between 0.2 mi. west of Solano-Yolo Co. line and 3 mi. east of Davis, Solano and Yolo Counties. Bids June 10. Awarded June 24. CD 6/12, under LB.

▲ **Fred Macomber Co.**, 4704 E. McKinley St., Fresno, Calif., LB **$2,267,300**, (5 bidders), Base Bid, Fresno Air Terminal Development (terminal bldg., concourse bldg., fire station, admin. and tower bldg., maintenance bldg., hangar-apron work and access roads), FRESNO, CALIF. City, City Hall, 2326 Fresno St., Fresno, Calif. Bids June 24. CD 6/9.

▲ **Young & Anderson Co. (J. E. Young Pipeline Contractor Inc. & Baker-Anderson Corp.)**, P. O. Box 68, Berea, Calif., CA **$14,975,491**, first section 33 mi. 87 in. diam. steel, Third Mokelumme Aqueduct from Sierra Nevada to East Bay, OAKLAND, CALIF. East Bay Municipal Utility Dist., 2130 Adeline St., Oakland, Calif. Bids May 8. CD 6/19, under LB.

▲ **Forest-Marach Corp.**, 3911 Pacific Hy., San Diego, Calif., CA **$6,212,044**, Second San Diego Aqueduct, prestressed pipe alt., from La Mesa and Lower Otay Reservoir, SAN DIEGO, CALIF. San Diego County Water Auth., 2750 4th Ave., San Diego, Calif. Bids May 8. CD 5/12, under LB.

BUILDINGS—LB & CA

▲† **Alcon-Pacific Co.**, Box 1551, Anchorage, Alaska, LB **$4,004,761**, (9 bidders), 118 units family HOUSING, Inv. 59-72, EIELSON AIR FORCE BASE, ALASKA. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bids June 26. CD 6/24.

▲† **Robert E. McKee General Contractors, Inc.**, Texas Ave., El Paso, Tex., LB **$5,131,100**, U. S. COURT HOUSE and FEDERAL OFFICE BLDG., PHOENIX, ARIZ. General Services Admin., 49 Fourth St., San Francisco 3, Calif. Bids June 25. CD 5/22.

▲ **Williams & Burrows, Inc.**, 500 Harbor, Belmont, Calif., CA **$4,695,000**, 5 story, bsmnt., 230,000 sq. ft. EDUCATION-PSYCHOLOGY BLDG., BERKELEY, CALIF. Bd. Regents, University of California, Admin. Bldg., Berkeley, Calif. Bids May 26. CD 6/2 under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
July 22, 29 Canada

HEAVY CONSTRUCTION—LB & CA

▲ **Columbia Bitulithic Ltd.**, Granville Island, Vancouver, B. C., CA **$2,967,272**, paving about 31 mi. Alaska Hy. and related work, Charlie Lake, BRITISH COLUMBIA, Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. CD 6/24, under LB.

PUERTO RICO

BUILDINGS—LB & CA

▲ **Five Boro Corp.**, 2 Lafayette St., New York 7, N. Y., U. S. A., CA **$2,901,147**, buildings, utilities for ACAN facilities, Camp Losey and Camp Salinas, ENG-08-123-59-61, PUERTO RICO. U. S. Eng., P. O. Box 4970, Jacksonville 1, Fla., U. S. A. Bids June 4, awarded June 22. CD 6/15, under LB.

U. S. POSSESSIONS

BUILDINGS—LB & CA

▲† **H. A. Lott, Inc.**, Box 25005 and **Johnson Drake & Piper, Inc.**, Bank of Commerce Bldg., Houston, Tex., U. S. A., CA **$2,615,800**, 116 units concrete masonry HOUSING (Cardenas) paving underground utilities, CANAL ZONE, Federal Aviation Agency, Panama Canal Zone, Panama. Bids May 22. CD 6/5, under LB.

AMERICANS ABROAD

BUILDINGS—LB & CA

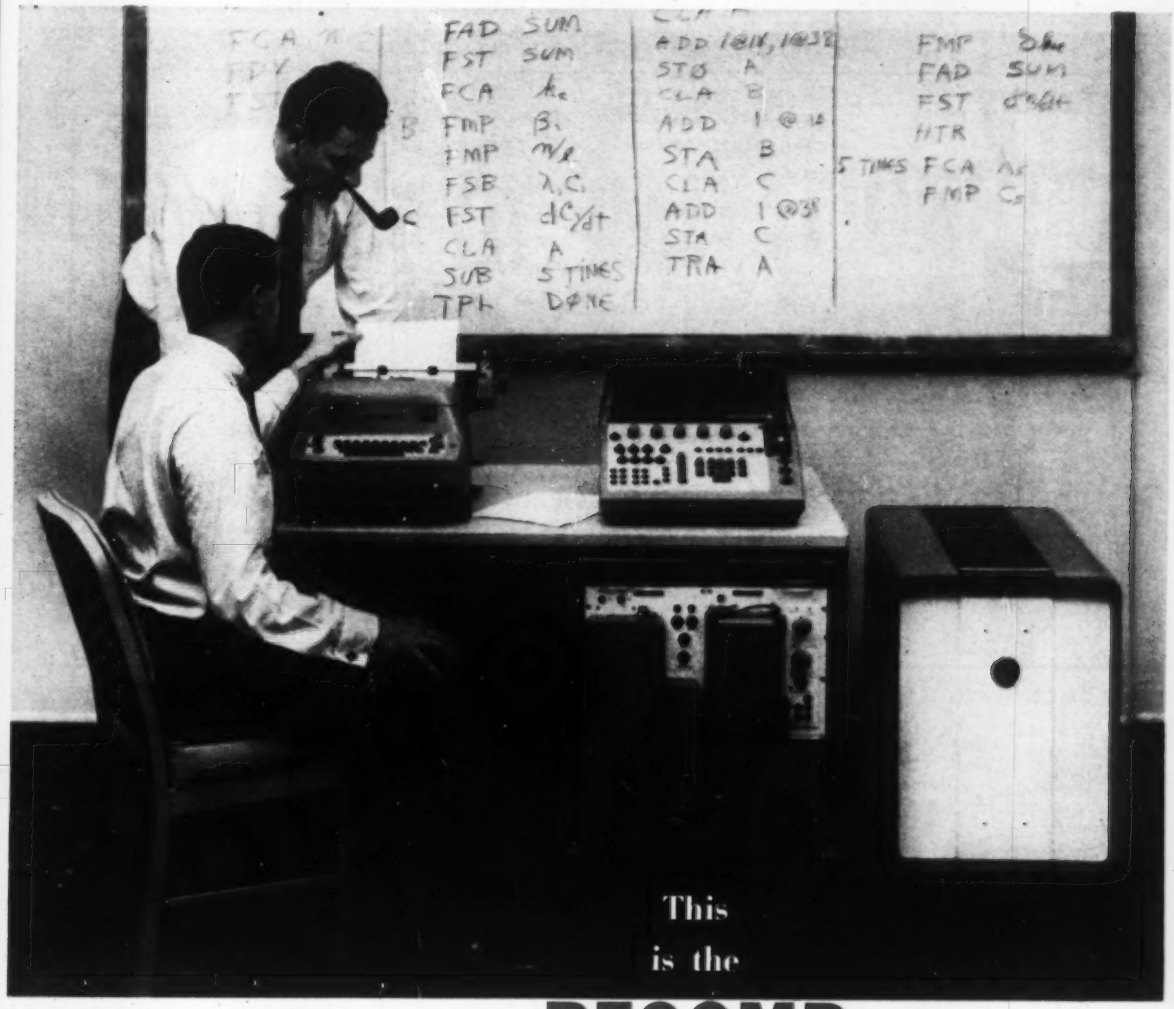
▲ **Parsons & Whittemore-Lyddon Organization**, 250 Park Ave., New York, N. Y., U. S. A., CA **$11,000,000**, 80 metric tons per day bleached esparto PULP PLANT, TUNISIA. Societe Nationale, Tunisienne, Tunis, Tunisia.

FOREIGN

HEAVY CONSTRUCTION—LB & CA

▲ **N. V. Ackermans**, Antwerp, Belgium, and **N. V. Aannemersbedrijf Vorheed van den Bout**, Aardenhout, Netherlands, CA **$3,000,000**, dredging Suez Canal, EGYPT. Suez Canal Auth., Cairo, Egypt.

(Proposal Advertisements see pp. 127 to 130)



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This engineer learned to program Recomp in two days

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Other offices: Dayton, Ohio; Washington, D.C.

Construction Scoreboard

CONTRACTS ...

AMOUNT OF CONTRACTS LET

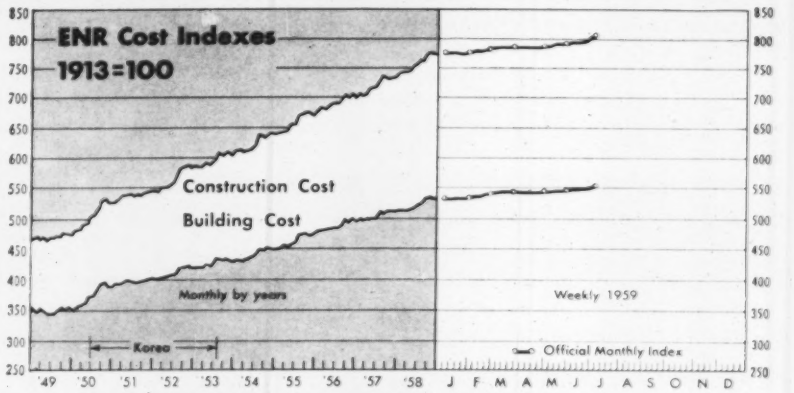
	†This Week	Cum. 28 wks 1959	Chge '58-'59
	millions		%
All Heavy Constr...	$578.4	$11,400.3	+ 7
By Ownership			
PRIVATE	318.4	5,589.5	+28
PUBLIC	260.0	5,810.8	− 7
State & Municipal.	143.6	4,070.8	− 9
Federal	116.4	1,740.0	− 5
By Type of Work			
PUBLIC			
Waterworks	19.5	252.7	+53
Sewerage	14.5	364.0	+12
Bridges*	8.2	332.3	− 9
Highways	47.9	1,710.3	− 1
Earthwork, Waterways	11.2	457.8	−32
Buildings			
Excl. Housing	58.4	1,451.8	+ 2
Housing	38.6	447.8	−44
Unclassified	61.8	801.1	+ 1
PRIVATE			
Buildings			
Mass Housing ...	136.9	2,568.3	+28
Commercial	52.8	1,222.3	+16
Industrial	126.0	1,517.3	+45
Unclassified	2.6	274.6	+ 8

* Includes private bridges † 4 day week

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

New Capital For Construction	Week of July 2	Cum. 27 wks 1959	Chge '58-'59
	millions		%
Corporate Securities..	$15.5	$2,151.5	−26
State and Municipal:			
All Except Housing	329.6	3,494.8	− 5
Housing	5.2	49.0	+45
Federal Loans	9.3	81.3	−11
Federal Aid	....	18.0	....
Total Nonfederal ...	$359.6	$5,794.7	−14
Federal Appropriations:			
Projects in U. S...	....	$38.3	−55
Outside U. S.....	....	....	−100
Total New Capital...	$359.6	$5,883.0	−23



CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of July 2* 1959	% Change from May 28 1959	% Change from July 3 1958
Construction Cost	806.69	+1.5	+5.7
Building Cost	551.74	+0.6	+5.2

* Official Monthly Index for July.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
To convert above indexes to 1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

WAGE RATES, 20-cities' average

	July 1959	% Change from June 1959	% Change from July 1958
Common	$2.603	+2.1	+5.7
Skilled (average 3 trades)	3.885	+1.0	+4.4
Bricklayers	4.144	+1.5	+3.9
Structural Ironworkers	3.898	+0.5	+5.6
Carpenters	3.622#	−0.4	+5.3
Equipment operators (average three types)	3.483	+1.0	+3.6

MATERIAL PRICES, 20-cities' average

Structural Steel (average 3 mills), per cwt	5.50	0	+4.3
Lumber, 2x4, Fir, per M fbm	124.85	+1.2	+10.1
Lumber, 2x4 Pine, per M fbm	109.43	−0.3	+8.8
Cement, bulk, per bbl	3.965#	−0.4	−0.1
Sand, per ton	2.475#	−0.6	−1.0
Ready-mixed concrete, per cu yd	13.89#	−0.2	+0.9
Gypsum sheathing, ½"x2'x8', per Msf*	62.875#	0	+0.1
Fiber board sheathing, ½" sq. ed., per Msf*	71.70	+0.4	+0.4
Mineral wool insulation, 3" batts, per Msf*	69.28	+0.2	−1.8
Crushed stone, 1½", per ton, CL	2.694#	−1.7	−5.0
Concrete blocks, sand gravel, 8"x8"x16", each* ..	.229	+1.3	+0.4

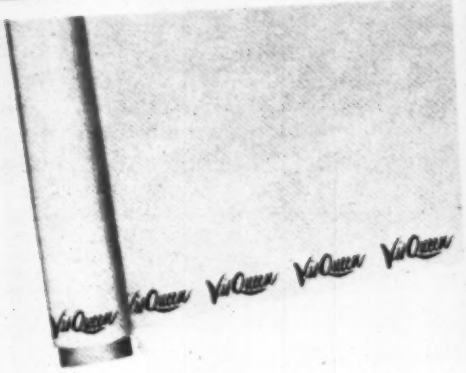
	June 1959	May 1959	June 1958
Brick, common per M	38.67	+0.4	+3.1
Lime, hydrated finishing, per ton, CL	39.091	+0.1	+6.2
Structural clay tile, 3x12x12", per M, 2,000 up*	182.50	−0.4	−0.7
Vitrified clay sewer pipe, std 12", per ft	1.342	0	+3.0
Concrete sewer pipe, 12", per ft	1.342	0	+4.0

* Delivered, trucklots
# Includes Philadelphia revision

ENR INDEX REVIEW

	Construction Cost 1913=100	Construction Cost 1949=100	Building Cost 1913=100	Building Cost 1949=100	Volume 1913=100	Volume 1949=100
Jul	762.52	159.85	524.29	149.03	705	204
Aug	764.44	160.25	525.62	149.41	575	166
Sept	773.47	162.15	535.02	152.09	541	156
Oct	775.30	162.53	536.53	152.51	446	129
Nov	774.12	162.28	534.96	152.07	384	111
Dec	773.81	162.22	534.79	152.02	466	135
1958 Average	759.16	159.15	524.68	149.15	531	153
1959						
Jan	778.28	163.15	536.23	152.43	460	133
Feb	778.75	163.25	537.25	152.72	472	136
Mar	781.35	163.80	540.32	153.59	586	169
Apr	784.41	164.44	542.93	154.33	532	154
May	790.37	165.69	544.44	154.76	700	202
Jun	795.16	166.69	548.35	155.87	650	188
July	806.69	169.11	551.74	156.84		

BEWARE OF IMITATIONS!



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Be sure our supply house delivers the VISQUEEN brand of poly for the vapor barrier.
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How would you load rock this size?

Shoot to size? Cable and lift? Shovel?

There are only two tractor shovels in the business built for work like this . . . the Allis-Chalmers 225-hp, 4-yd HD-21G and the 150-hp, 3-yd HD-16G. They're in a class by themselves. If you move ore, rock, gravel or overburden . . . if you need a machine that will pioneer, rip, load and handle a multitude of jobs, see them in action. They'll go it alone or team up with other machines to help improve your profit.

Increase bidding power—You're way ahead in bidding flexibility with a big-capacity tractor shovel. Jobs miles away are simple transport operations with Allis-Chalmers BIG tractor shovels. Forget about expensive dismantling, problem loading, hauling and setup again at job site.

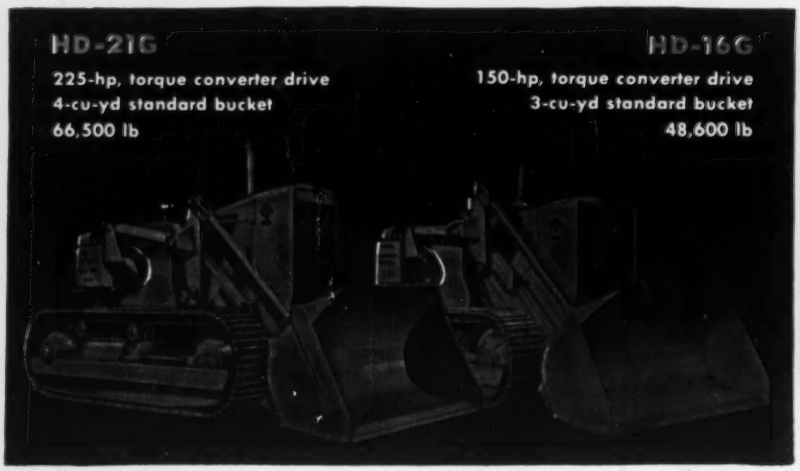
Handle scattered jobs economically—*Wherever* there's loading to do on a new job, these two dependable units "walk" to work . . . through mud—over rough terrain—those spots where *only crawlers* can go! They build their own roads—dozing, cutting, filling, compacting . . . load up to 4 yd at a clip*

What's more . . . BIG HD-21G's—16G's are not single-purpose units. They're pioneering machines. They'll open up new cuts or make quick work of clearing, piling stumps, brush or boulders. And, of course, loading, stockpiling and cleanup are their steady specialties.

They're ripping specialists—Long track, outstanding balance and power enable HD-21G's—16G's with rear-mounted Tractomotive rippers to open up tough material over *two feet deep*. Enough hydraulic penetrating pressure is developed to lift the tractor itself off the ground.

You *can afford* to use these big tractor shovels on many utility chores—from breaking up concrete roadbeds with 72,700-lb break-out force, to complete one-man, one-machine demolition operations. When you apply the abilities of the HD-21G—HD-16G to your own jobs, you'll see how either one or both of these production units can cut costs . . . put a *sharper point* on your favorite bidding pencil.

See your Allis-Chalmers dealer—He's the ONLY man with tractor shovels from 72 to 225 hp . . . from 1½ to 7¼ yd. He'll be happy to fill in the details—show you an Allis-Chalmers tractor shovel in action. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wis.



*Special-purpose buckets available up to 7¼ yd.

Walk to work—This Allis-Chalmers HD-21G makes its own way to rugged, inaccessible working areas . . . can "walk to work" where most units with 4-yd capacity would have to be brought in piecemeal.

. . . move ahead with ALLIS-CHALMERS

Big Allis-Chalmers tractor shovels are built to handle rock this size with ease and durability. Watch one work—or ask the man who owns one about the *capacity, versatility,* and *easy transport* they offer . . . *three* of the most desirable profit characteristics you'll ever find in *any one machine!*

One-machine fleet—HD-16G handles everything on building removal projects like this. Tearing down the old, loading out scrap, fine-grading in preparation for the new.

No problem loading—Moving from job to job quickly with the HD-21G and HD-16G adds even more value to these two heavy-duty tractor shovels.

A-C . . . . . power for a growing world

Canada's Venturers Flex Muscles

- **Suburban developments in Toronto and Montreal mark growth of the big cities.**
- **At the same time, pipeline, industrial and mining projects push into the frontier.**

Suburban and industrial expansion of Canada's major cities is coming hand in glove with a drive to tame the country's vast, still-unpopulated frontier. This potent combination, with its huge private construction projects, may help push the potential Canadian construction market to a near-record year.

Eleven developments, totaling over $3 billion, are currently on drawing boards, and some of them are flowing into the contract and construction stages. Each has an estimated construction cost of $75 million or more. Most of the work is in the Montreal, Toronto and Vancouver areas.

Biggest of the plans, aside from the industrial and commercial developments, is a $1-billion network of oil pipelines across the western plains provinces to be built in the next four or five years.

In Quebec Province, a $250-million iron ore mining project is under way. This project includes construction of two towns, a railroad and highways. And a $100-million industrial community will be built in the heart of British Columbia's Fraser Valley.

Toronto appears destined to come into bloom as a major private construction market. Big jobs are taking shape, and bigger ones are proposed.

Cost of started and proposed jobs range between $75 million and $500 million each.

Already started is Thorncliffe Park, a $100-million community in northeastern Toronto (ENR Oct. 3, 1957, p. 102). The 390-acre site includes residential, commercial and industrial areas.

Thorncliffe Park Ltd. will develop all property except schools, churches and six apartment-house lots. Construction will start this summer on a 45,000-sq-ft shopping center and industrial buildings.

Thorncliffe Park will house about 12,500 people when completed early in 1963. It was financed by stock sales and $4 million in debenture bonds. Architects are Crang & Boake, Toronto.

Just northeast of Thorncliffe Park is Flemingdon Park—a proposed $100-million industrial-residential community. Toronto Industrial Leaseholds Ltd., an affiliate of Webb & Knapp Canada Ltd., will develop the 374-acre site. Construction will start this fall for completion in 1964.

This community, expected to have a population of 18,000 to 20,000, will consist of:

- Apartment buildings from two to 20 stories high. They will go up at an annual rate of 1,000 to 1,500 units for the next five years.
- Light industrial development on a 40-acre site.
- One hotel.
- Recreational facilities, including a golf course, swimming pools, tennis courts and playgrounds.

Toronto Industrial Leaseholds Ltd., or an affiliated company, will handle all construction. All property will be leased, except for some commercial sites, which will be sold.

In charge of the development are Webin Community Consultants and Project Planning Associates Ltd., of Toronto. Webin's chief architect is Sigmund D. F. Reszetnik.

Northwest of Toronto, near the town of Brampton, are two other major projects—Bramalea and Peel Village.

Bramalea will be a $500-million industrial residential city, with a population of 50,000. Bramalea Consolidated Developments Ltd. will develop the 9-sq-mi site.

In addition to housing, the city will contain commercial areas, greenbelts and industrial parks. The first scheduled industrial park will cover 230 acres.

Bramalea is a joint financial venture of U.S., Canadian and British interests. Planners are Herbert L. Coons & Associates, Toronto, H. V. Lobb & Partners, London, and Mott & Hayden Associates, Washington. Engineers are Mitchell Engineering Group & Foss of Canada Ltd., London; and R. V. Anderson & Associates Ltd., Toronto.

The first stage of $100-million Peel Village, just southwest of Bramalea, will be started this fall. Peel Village Developments Ltd., Toronto, plans a 1,000-acre community combining residential, industrial and commercial areas.

Work will start this fall on two sites—a 100-acre residential development and a 125-acre industrial section.

Some construction will be done by outside builders and some by subsidiaries of Peel Village Developments. The community is being planned and developed by Municipal Planning Consultants Co. Ltd., of Toronto.

Consolidated Building Corp. Ltd. plans a $100-million complex of office buildings in the heart of Toronto. First stage is a 12-story building.

Montreal is not standing still either. Webb & Knapp Canada Ltd. has pushed up target date for completion of its Place Ville Marie, to late 1961, instead of 1962.

Steel erection is already under way on the $75-million project. The project calls for commercial and office development in three city blocks around Canadian National Railway's downtown terminal (ENR Oct. 31, 1957, p. 44).

Place Ville Marie will include:

- A 40-story, cruciform-shaped office building with four, one-story quadrants at its base. The building will be Canada's largest and tallest, with 1.6 million sq ft of space above ground.
- A 15-story office building.
- Shops, theatre and pedestrian plaza.

Architects for Place Ville Marie are I. M. Pei & Associates. Structural engineers are Brett-Ouellette-Blauer-Associates and general contractor is Foundation Co. of Canada Ltd.

Engineering studies are now under way on a hot and cold rolled products steel mill, estimated at $75 million. A partnership of Dominion Steel and Coal Corp. and Sagemines Ltd., both of Montreal, plans to build the mill at Contrecoeur, Que., about 20 miles east of Montreal.

In comparative wilderness 280 miles northeast of Montreal, construction has begun on several portions of a $250-million mining development of Quebec Cartier Mining Co., a subsidiary of U. S. Steel Co. It includes building two new communities—one for 45,000 people and another for 2,000.

Contracts have already been let for: a 60,000-hp hydro plant on the Hart-Jaune River; a 193-mile access road and railroad from the mining area at Lac Parbel to the shipping point at Port Cartier on the St. Lawrence River; loading docks and harbor improvement at Port Cartier on the St. Lawrence River; stage one of the two townsites—Gagnonville and Port Cartier; and an iron ore concentrator for Lac Jeannine.

The target date for completion of most projects now under way is the end of 1960.

Canada's growing natural gas industry may spend more than $1 billion for two major pipelines in western Canada. Trans-Canada Pipeline, Ltd., Toronto, plans natural gas lines in the western provinces, under a four-year program that may cost $500 million.

In addition, Alberta Gas Trunk Line Co. estimates it will spend over $500 million for various projects in the next four or five years.

Langley Park Estate, a 4,000-acre industrial park located 35 miles southeast of Vancouver, B. C., is a 25-year project (ENR Jan. 15, p. 102).

The $600-million project is still in planning. Grosvenor-Laing (B. C.) Ltd., sponsors of the development, says construction of the first factories will begin in late 1963 or early 1964.

About 75% of Langley Park will contain industrial facilities. The remainder will be given over to residential and commercial use. Some land will be sold; the rest leased.

The same organization is developing the Annacis Island industrial park, a few miles southwest of Vancouver. When G-L opened this 1,500-acre island in 1955, it set up a 20- to 25-year development plan, with outlays to hit $3 million annually. Already, 38 companies have signed leases, 34 have moved in, and five more are negotiating leases. About 7% of the island is now tenanted.

California Votes Construction

California's legislature completed action on measures that may ultimately lead to $605 million in new construction of all types in the next few years. This would be in addition to a $1.7-billion water development program to be acted on by the voters in November, 1960 (ENR June 25, p. 32).

Largest expenditure proposed or authorized, aside from the water program, is for highways—$350 million. This will be financed from motor fuel taxes. The remaining $255 million worth of construction would be financed by bond issues.

Authorizations and proposals include:

- $90 million for construction at state universities, colleges, correctional institutions, mental hospitals and office buildings.
- $15 million to local agencies for construction of small water projects.
- A $125-million tube crossing of San Francisco Bay for the projected Bay Area Rapid Transit System.
- A $25-million reconstruction program for the San Mateo-Hayward and Dumbarton bridges across the southern end of San Francisco Bay.

As a first step toward the tube crossing, the legislature authorized appropriation of $750,000 from the revenue fund of the San Francisco-Oakland Bay Bridge to pay for engineering work.

The measure also provides authority for bond financing, subject to a referendum. It stipulates that the tube will precede construction of any new crossings of the bay financed in whole or in part by toll revenues earned by the San Francisco-Oakland Bay Bridge. If the tube bonds have not been approved by the voters, by November 30, 1962, accumulated tolls from the Bay Bridge will be used to finance a structure south of the existing facility.

The lawmakers gave the California Toll Bridge Authority two choices for financing the San Mateo-Hayward and Dumbarton bridges remodeling. It can issue revenue bonds backed by toll revenues from the crossings, or it could use funds now on hand, or to be earned by the San Francisco-Oakland Bay Bridge between now and December 31, 1962.

Another enabling measure may eventually result in a single body to administer and coordinate all existing and proposed transportation facilities in the San Francisco Bay Area. The measure created a Golden Gate Commission and provided it with $250,000 to determine the feasibility of establishing a Golden Gate Authority. The commission's report will be given to the 1961 session of the legislature.

Construction Spending Record

Spending for new construction this year is at a record rate of $55.1 billion—12% ahead of the $49.1-billion rate set last year—according to a joint estimate of the U. S. Departments of Labor and Commerce.

January-May figures indicate there's also been a 12% rise in over-all construction volume, despite rising construction costs.

With seasonal expansion, the June total of $5 billion for construction put in place set a new high for the month. Total for the first six months' work in place was $24.9 billion. Both the June and January-June figures are up 15% from last year (see p. 117).

The May-June increase in residential construction was short of the normal seasonal gain. This may be the result of stiffer mortgage rates.

But nonresidential construction spending, including industrial building, enjoyed a better-than-normal seasonal upturn in June.

Highway spending is up 17% above the first half of 1958, to $2.4 billion. Military construction, including missile bases, is running 23% ahead of January-June of last year. But spending for school construction lags 3% behind a year ago.

Higher Wages and Lumber Push Costs to New Highs

Substantial wage increases and peak lumber prices maintained pressure on ENR's 20-Cities cost indexes in June. The Construction Cost Index climbed a hefty 1.5% for the month to a record 807. The Building Cost Index moved up 0.7% to a record 552.

The Construction Cost Index has moved up 5.8% since July of 1958, and the Building Cost Index is up 5.3% for the year.

Biggest factor is labor, up 5.7% for common and 4.4% for skilled.

(*B&F continued p. 117*)

Your Operator Takes on New Skill with This Easy-to-Manage JOHN DEERE BACKHOE-LOADER

Experienced operator or beginner, he'll get onto the John Deere Backhoe's two-lever digging control in a hurry. He'll find plenty of smooth hydraulic power and break-out pressure behind those levers, too — and with the low mounting of the boom's rotary cylinder, he'll get the best possible view of his work.

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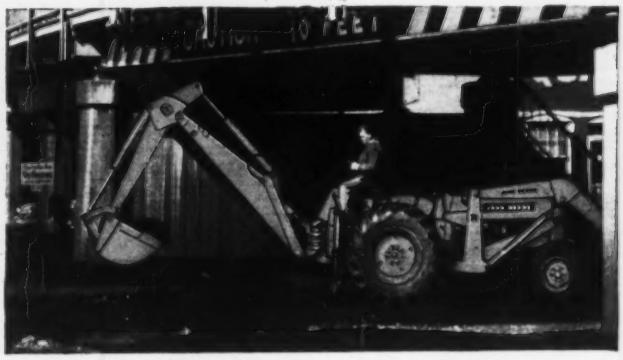
Backfilling and loading are fast, too, with the "440's" optional clutch-type manual direction reverser and power steering.

For detailed specifications, and price information see your John Deere Industrial Dealer.



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JOHN DEERE "Specialists in Low-Cost Power with a Heavyweight Punch"

Contracts Are Up 7% Over '58

Heavy construction contract awards in June totaled $1.9 billion, only 1% below the record for the month, established last year. Cumulative volume for the second quarter is now $5.7 billion; for the first half, $10.3 billion.

The first-half total tops last year's same period by 7%, and is only 9% below the first half of record 1956. Construction put in place also topped last year (see p. 115).

The second quarter volume is also second best on record, less than 1% below the all-time second quarter record established in 1958.

Private industry continues to spark this year's revival in construction. Although June awards of $909 million for private work are 10% below May, the volume is 43% above one year ago. The total is a new record for June.

And the first half figure of just over $5 billion is 21% above last year's first six months.

Public construction awards of $967 million in June topped May by 1%, but they are 24% under the volume registered one year ago. During this year's first half, public projects valued at $5 billion were awarded. This is 3% below the record for the period set in 1958. Responsible for the decline are earthwork-dams-waterways and public housing. Every other category within the public works classification topped the 1958 six-month totals.

This year's lag in public construction through June is concentrated in the state and municipal section. Awards of $3.8 billion are 6% below the first half of last year. This lag will be considerably reduced with the award of a contract for Wanapum Dam in Washington.

Federal construction in June shows a sharp cutback from both May and one year ago. The $265 million in awards are 12% below May and 40% below one year ago. But first-half volume of $1.6 billion is 7% above 1958's same period.

The sharp upturn in industrial building this year exceeds all expectations. Contract awards in the first six months total $1.4 billion, a 37% leap above last year. Volume for June of $208 million is off 26% from May but is 28% above a year ago.

Another star in the private market is mass housing. It rolled up the largest volume of contracts of any sector in both June and for the first six months. June contracts totaled $475 million and the second-half total stands at $2.3 billion. The six months gain is 22%. The June volume is 53% above that of June 1958.

Commercial building is maintaining a steady pace. June's $170 million worth of new contracts dropped 12% below May, but it is 44% above a year ago. More than $1.1 billion worth of commercial structures have gone to contract in this year's first half, 11% more than last year.

In the public works category, highways are 2% ahead of last year's first half with a volume of $1.6 billion. Buildings other than housing, with $1.4 billion in awards in the first six months, is 4% ahead of last year.

Only one region—the Mid-Atlantic states—fails to report larger construction volume during the first half compared with one year ago. The Mid-Atlantic region is off 11%. But the drop can be attributed to two unusually large contracts bunched together in last year's first half. These were the Niagara Power Project for the Public Power Authority of the State of New York and the Levittown III housing development at Burlington, N. J.

The South is booming. Contracts in that region are 44% ahead of last year's first half, with a total of $1.7 billion. The Far West increased its margin over 1958 by 17% with awards of $1.7 billion.

The Midwest registered a gain. At the end of March volume was 21% below the first quarter of 1958. But at the end of this first half it pulled fractionally ahead of last year.

New England, with six-month volume of $636 million, is 4% ahead of last year. The region from the Mississippi to the Rockies, had volume of $2.1 billion, an 11% gain over last year.

Engineering Construction Contracts for June

Four Weeks—Thousands of Dollars (000 Omitted)

	June, 1959							% Change June '58 to '59	Six Months Continental U. S. Cumulative		% Change '58 to '59	Canada June 1959
	New England	Middle Atlantic	South	Mid-West	Mississippi to Rockies	Far West	Total Continental U. S.		1959	1958		
Public Works, Total	**46,189**	**147,284**	**177,964**	**194,633**	**211,673**	**189,791**	**967,424**	**−24**	**5,316,228**	**5,455,831**	**− 3**	**67,590**
Waterworks	1,869	3,278	4,224	683	7,278	13,025	30,357	+ 8	219,570	157,280	+39	1,352
Sewerage	2,341	7,779	9,706	22,303	9,429	14,137	65,895	+ 4	326,710	304,645	+ 7	1,318
Bridges	640	18,664	9,479	14,066	13,948	4,323	61,120	−30	302,569	296,047	+ 3	3,650
Earthwork, waterways	1,735	4,330	3,661	403	15,046	55,058	80,233	−60	430,348	604,304	−29	7,253
Streets and Roads	19,543	54,137	68,364	59,569	88,641	31,122	321,376	+ 3	1,574,480	1,541,484	+ 2	23,591
Buildings: Residential	2,361	27,840	25,246	17,102	12,884	13,556	98,989	−18	393,294	585,530	−33	2,044
Other	12,576	23,935	37,507	72,424	26,009	38,671	211,122	− 5	1,359,188	1,302,151	+ 4	23,694
Unclassified	4,924	7,301	19,777	8,083	38,438	19,809	98,332	−58	709,067	664,390	+ 7	4,708
State & Municipal	**40,957**	**109,509**	**123,385**	**166,229**	**145,839**	**116,592**	**702,511**	**−15**	**3,750,068**	**3,908,503**	**− 6**	**52,438**
Federal	**5,232**	**37,755**	**54,579**	**28,404**	**65,834**	**73,199**	**264,913**	**−40**	**1,566,160**	**1,457,328**	**+ 7**	**15,152**
Private, Total	**60,318**	**286,046**	**112,394**	**224,533**	**131,136**	**114,709**	**909,136**	**+43**	**5,031,619**	**4,172,333**	**+21**	**58,591**
Bridges			100	3,000			3,100	+1,140	2,450	8,436	−59	
Buildings: Industrial	3,242	22,703	60,168	70,959	38,808	12,308	208,188	+28	1,356,982	987,021	+37	15,114
Mass housing	45,884	190,044	29,076	82,662	59,127	68,692	475,485	+53	2,341,227	1,921,626	+22	11,763
Commercial	10,327	36,199	18,938	49,649	24,714	29,775	169,602	+44	1,117,429	1,010,806	+11	22,461
Unclassified	865	17,100	4,112	18,263	8,487	3,934	52,761	+24	212,531	244,444	−13	9,253
Total June, 1959—4 weeks	**106,507**	**413,310**	**290,358**	**419,166**	**342,809**	**304,410**	**1,876,560***	**− 1**				**126,181**
May, 1959—4 weeks	81,670	442,699	280,579	309,405	295,971	496,416	1,906,740*					98,118
June, 1958—4 weeks	118,063	457,284	272,653	318,690	391,754	341,445	1,899,889					138,966
Six Months—1959	**636,468**	**2,396,824**	**1,734,326**	**1,757,162**	**2,125,895**	**1,697,172**			**19,347,847***		**+ 7**	**664,125**
Six Months—1958	612,860	2,702,728	1,201,468	1,752,816	1,912,050	1,446,242				9,628,164		834,051
% Change '58 to '59	+4	−11	+44	+0.2	+11	+17						−20

* Add Alaska: June '59: 12,701 May '59: 13,744 6 Mos. '59: 59,951

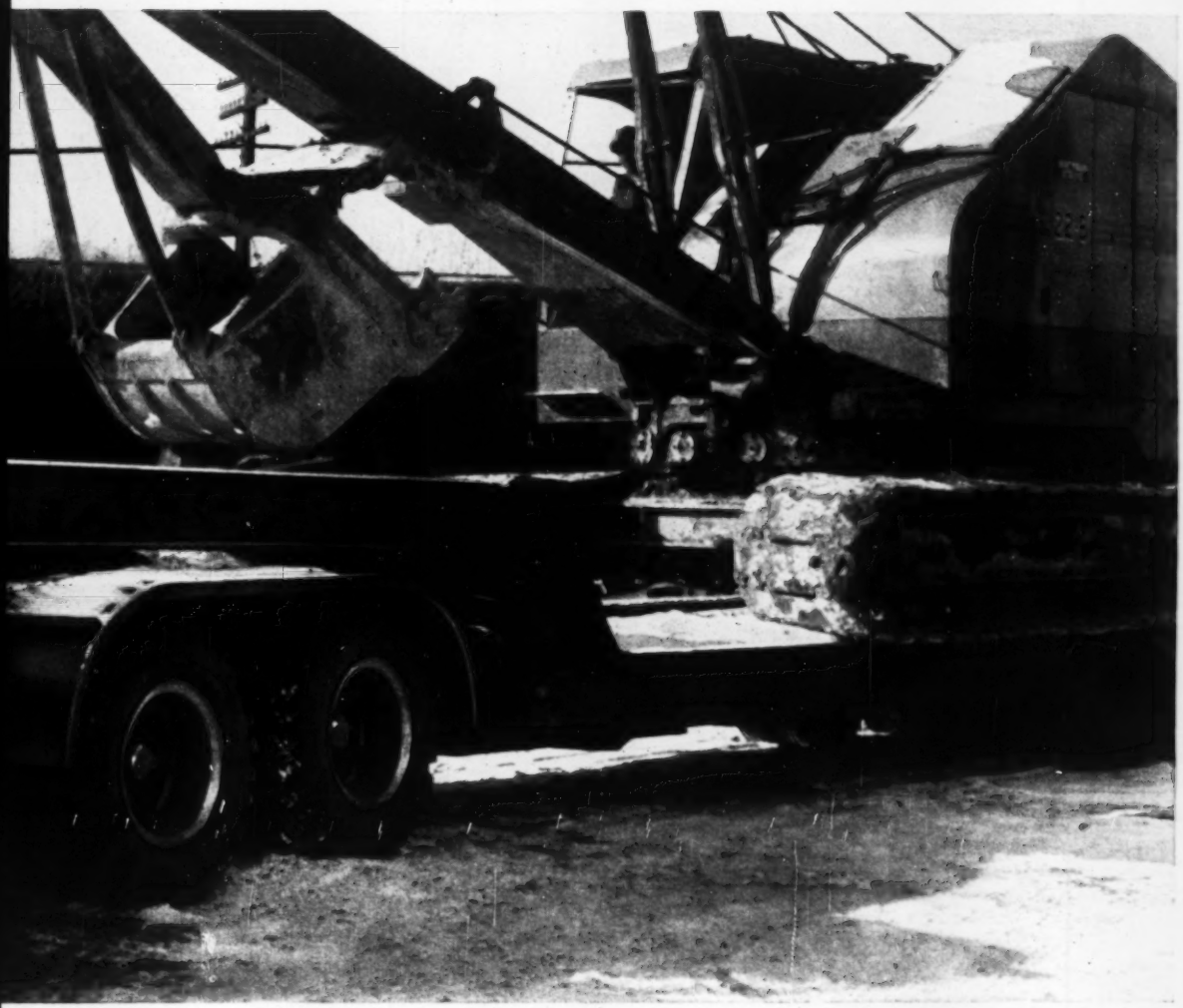
ENGINEERING NEWS-RECORD *reports continental U. S. construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $53,000; *other public works,* $88,000; *industrial buildings,* $110,000; *other buildings,* $400,000.

Chevy shows plow-horse pulling ability on big construction job

"Chevy pulled about 37 tons out of the mud...you can't top that!"

—CHARLES MATHER, PRESIDENT,
MATHER CONSTRUCTION COMPANY,
JEFFERSONVILLE, INDIANA.

No job's too tough



"Our Chevy has to have real power since we haul cranes, bulldozers, heavy pipe and other heavy construction equipment on the trailer. One time we had to load a 25-ton crane on the trailer in a new housing area. The mud was so deep that this crane made the trailer sink in the mud down to its axle.

"The Chevy not only pulled the load out, but I discovered I'd left the trailer brakes on! So the truck pulled about 37 tons out of deep mud *even with the trailer brakes on*. You can't top that!

"We have Powermatic transmission on our Chevrolet and that saves us a lot—you don't shift yourself to death. And less wear on the brakes saves us money. It's just like luxury driving with Powermatic. All you have to do is relax and watch the road."

Chevy, you'll find, is winning a lot of new boosters among construction firms, for a number of good reasons. Reasons such as the big 230-h.p. Workmaster V8 that powers Chevrolet Series 90 and 100 trucks. In tough service the country over, this engine is delivering plenty of proof that it's just about the best yet for big-tonnage hauls. Its high torque (335 ft.-lbs.) gives you plow-horse pulling ability at low speeds and assures the power to keep mammoth loads moving briskly, right on schedule. Its advanced Wedge-Head design and short piston stroke help keep operating costs *low* . . . and its durable features, such as Moraine 400 bearings and Rotocoil exhaust valve rotors, help chop upkeep expense.

This Chevy powerplant is one sure answer to extra savings, and so is the tough chassis that leads to low maintenance with components specially designed for the capacity to out-muscle the roughest kind of runs. For the *latest* in low-cost hauling equipment, see your Chevy dealer! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

for a Chevrolet truck!

CHEVROLET

NLRB Curbs Boycott Activity

General Electric decision may help outside contractors isolate themselves from industrial labor disputes

Independent contractors working in industrial plants that are in operation may be able to reduce the risk of getting drawn into the plant's own labor disputes.

The method: Having a plant entrance set aside for the exclusive use of their workers.

The suggestion comes from a National Labor Relations Board decision that says an industrial union engaged in an illegal secondary boycott last summer when it picketed a gate assigned to construction workers at General Electric's Appliance Park plant near Louisville, Ky. The picketing stalled the work of six neutral outside contractors for nearly two weeks.

The trouble started when the International Union of Electrical Workers (a former CIO union) struck G.E. over 24 unsettled grievances against the company. G.E. then had outstanding 12 contracts with outside contractors. One of the five gates was for the use of these workers only. All the gates, however, were picketed, and the picket lines were honored by the neutral construction workers.

The board concluded that the union had picketed the construction gate in order to make the construction workers leave their jobs. The union's object was to strengthen its hand by inducing the outside contractors to quit doing business with G.E. unless the company settled the labor dispute with its own workers.

The essential element that caused the union to lose the case was the union's ability adequately to publicize its dispute with G.E. without resort to the construction gate picketing. (When such a situation exists, it is easier to make a secondary boycott charge stick.)

In view of this, the G.E. decision is significant in three respects:

• **It pinpoints the dilemma Congress created** by giving unions a right, on the one hand, to publicize their labor disputes through pickets, and by attempting, on the other hand, to prevent neutral employers from becoming victims of labor controversies not of their own making.

• **It shows one way of isolating primary labor disputes for the protection of neutral employers.** (In fact, G.E. had provided a separate entrance for construction workers in order to protect itself from labor disputes the outside contractors might bring into the plant.)

• **It reaffirms the principle that unions must avoid hurting neutral employers insofar as possible.** In this respect, it strengthens the Moore Drydock case, which one of the board members said applies whether picketing occurs on the premises of the primary or secondary (neutral) employer.

That decision, which is one of the leading boycott cases, specifies the extent to which unions must try to isolate neutral employers from their disputes. It says the premises of a neutral employer can be picketed under these circumstances only:

• The basic dispute must also exist at the place of the picketing.

• The primary employer (the one with whom the labor dispute exists) must be engaged in his normal business at the place where the picketing occurs.

• The picketing must be limited to places reasonably close to the location of the basic dispute.

• The picketing must disclose that the labor dispute is with the primary employer only.

Wage Dispute Snags on Safety

Safety of the Second Narrows Bridge has become a major issue in a wage dispute between Local 97 of the International Association of Bridge, Structural and Ornamental Ironworkers and the contractor, Dominion Bridge Co., Ltd. The bridge is now under construction in Vancouver, B.C.

Adding to the dispute is the memory of the bridge's collapse last year, when 18 workmen were killed (ENR June 26, 1958, p. 21).

Union members, who are striking in defiance of two court orders, claim unsafe working conditions on the bridge as the reason for their continued work stoppage.

Dominion Bridge, trying to force the men back to work, contends it is unsafe to leave the bridge in its present condition. The southern span is unanchored to the pier nearest shore.

The real issue, however, is a stalemate in wage and fringe benefit negotiations.

The union, which now has a scale of $2.62 an hour, is demanding $3 an hour minimum, retroactive to January 1, without a cut-back in fringe benefits. Management offered a 11-cent raise, but insisted on the right to import workers and to reduce travel pay. These limitations would nullify the wage gain, says the union.

As a result of the wage dispute, nearly 700 high-steel workers walked off the Narrows job and two other projects, shutting down $90 million worth of construction. Completion of work on the southern span of the bridge would take another two to three days.

The safety issue was then injected into the dispute by the contractor, who obtained an injunction against the strike on that ground.

Col. W. G. Swan, of Swan, Woster & Partners, Vancouver consulting engineers for the project, said that, while the bridge is reasonably safe, there is "a certain hazard involved."

"It is not a good position in which to leave (the bridge)," he said. "The hazard which exists is proportionate to the period of time the bridge is left in its present condition," he added.

The union then used the safety issue as a lever in the wage dispute. It adopted the attitude that if the bridge was not safe to be left as it was, it was not safe to work on either. The union withdrew its pickets, claiming this fully met the court's order.

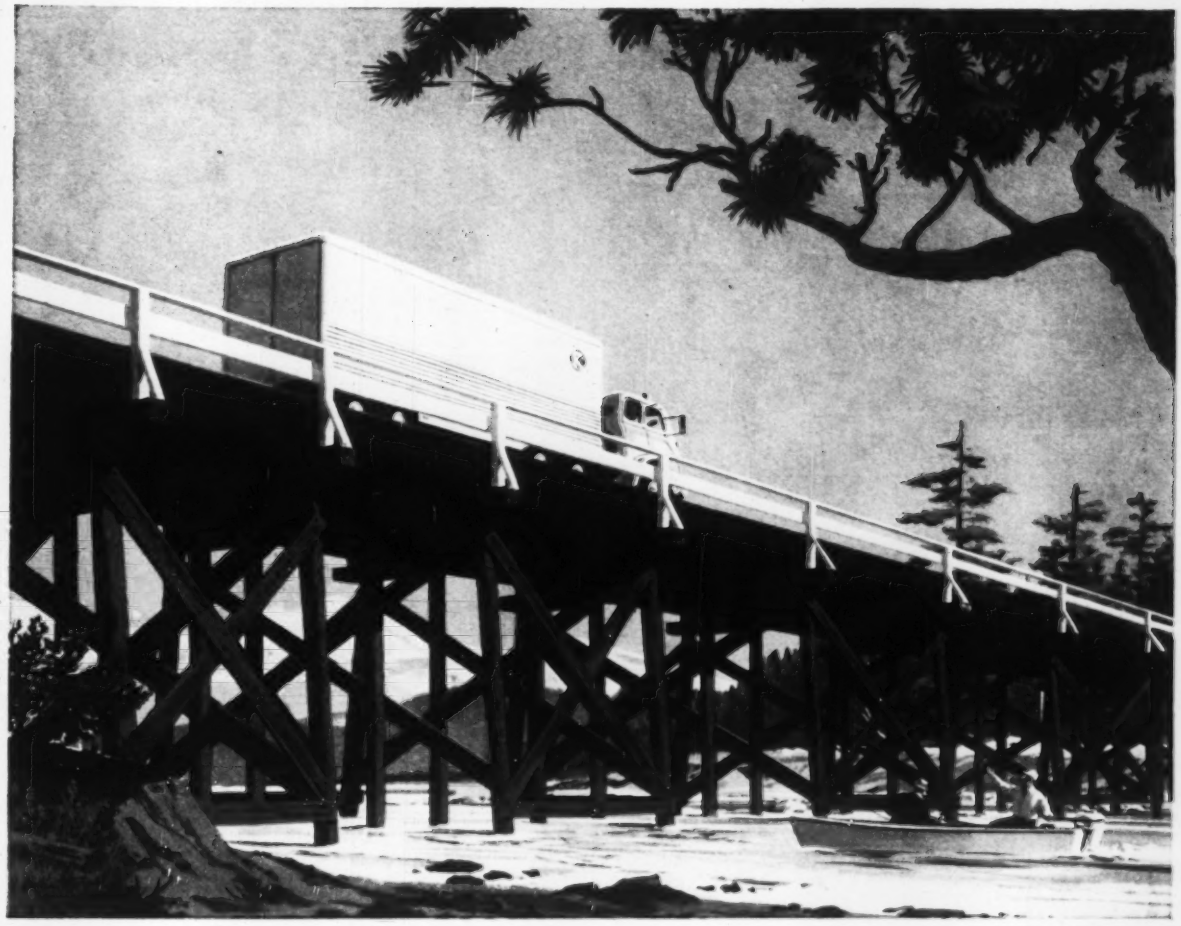
Dominion Bridge got another court ruling upholding the first injunction.

When the ironworkers failed to obey the second court order, the union disclaimed responsibility. The men had been ordered back to work, said the union's business agent. But with the bridge in an unsafe state, it was up to individual members to decide whether they want to work, he explained. "When collective agreement (labor contract) does not exist," he added, "the union doesn't have much to do between the men and the company."

Meanwhile, Highways Minister Philip Gaglardi is concerned. Last year's collapse occurred after a strike, he said, "and it's making me sweat."

The province-wide shutdown over wages continues. Work is still halted on B. C. Electric Co.'s Bridge River hydro project and the Peace River Bridge.

(*Labor continued p. 125*)



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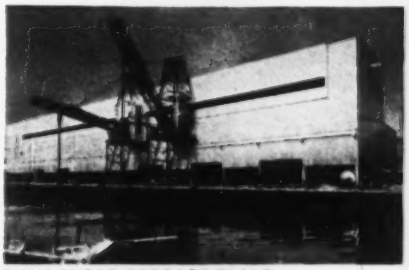

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Under the concept of single responsibility we handle complete foundation construction—soil investigations, pile manufacture, load testing, and installation. Where problems arise our engineers are on hand with ready solutions, and where problems are tough, Raymond stands ready to dig for solutions. So, whatever, wherever, and whenever your next construction may be, let us consult with you.

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HAWAIIAN VILLAGE HOTEL (HENRY KAISER).
573 step-taper piles.

FOREMOST DAIRIES BUILDING.
306 step-taper piles.

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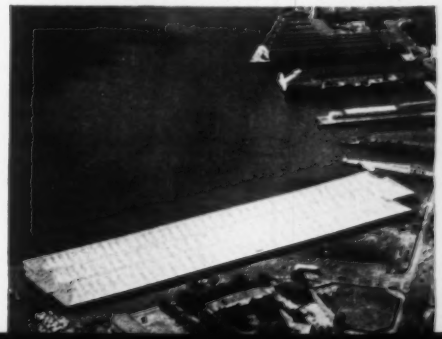

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NEW DW21 SERIES G "LOADS FAST AND HAULS FASTER"

Supt. Ruben Hawkins, Harbaugh & Wright, Inc., Enid, Okla.

More production, faster cycles, more profit—that's the report on the new Caterpillar DW21 Series G Tractor with new No. 470 LOWBOWL Scraper.

As Ruben Hawkins (see above) sums it up from his experience on a 2½-mile Interstate Highway job in Oklahoma:

"This new DW21 has plenty of power. It loads fast and hauls faster."

The contracting firm of Harbaugh & Wright, Inc., brought in four new DW21s to move 1,263,218 yd. of dirt on this project. On the first 10-hour day, they handled 484 loads of 19 cu. yd. on an 1,100-ft. haul. And they kept up this blistering pace to finish the job 40 days ahead of schedule!

For the down-to-earth facts on this great new heavy-duty wheel rig, see the box below. Note that the new DW21 Series G gives you important increases in horsepower, rimpull and scraper rating. Standard tires have also been increased to 29.5-29 (28-ply rating) to handle the increased scraper capacity.

Your Caterpillar Dealer has the complete story on the important new DW21 Series G—and he'll prove what he says with a demonstration on your job.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

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NEW DW21 SETS NEW STANDARDS OF EARTHMOVING

Cat DW21 Series G Tractor with No. 470 Scraper is pushloaded by Cat D9 Tractor on Interstate Highway job in Oklahoma.

NEW DW21-NO. 470

	Series G	Series B
NEW HP	—345 (maximum output)—	increased 8%
NEW RIMPULL	—49,100 lb. (maximum)—	increased 12%
NEW SPEEDS	—increased rimpull provides up to 20% faster travel speeds under similar haul road conditions	
NEW CAPACITY	—19.5 cu. yd. (struck)—	increased 8%
	27 cu. yd. (heaped)—	increased 8%

Corresponding increases have been made in the new four-wheel DW20.

Joint Bargaining Suffers a Split

Eight employer groups that have been bargaining as a unit split over negotiation of carpenter contract

Are the components of the construction industry too diverse to permit employer groups to bargain effectively on a joint basis?

That question has been raised in San Francisco, where negotiation of a new three-year labor contract for 16,000 carpenters in the four Bay counties has caused a serious split in the ranks of employers.

The Northern and Central California Chapter of Associated General Contractors has withdrawn from the eight employer associations which, in the past, have negotiated as a single unit. It has announced its readiness to negotiate and sign a separate contract with the carpenters.

AGC's reason for the withdrawal is that its interests, which lie largely in heavy construction, are sufficiently distinct from those of other negotiators to warrant a separate contract. Other groups are engaged primarily in lighter construction and home building.

Under the new contract, carpenters will receive a 62.5-cent raise in pay and six cents more in fringe benefits. They are granted an immediate increase of 22.5 cents, 17.5 cents plus five cents for a vacation fund next June, and 22.5 cents more in June 1961. On May 1, 1960, there will be a one-cent increase for health and welfare.

AGC President Bruce McKenzie said, "We don't feel we should agree to some of the items in the contract." He pointed specifically to a clause on parking facilities, to a provisions for deduction-itemized check stubs and to some health, welfare and pension clauses. He contends the AGC was unable to attend meetings at which these clauses were negotiated and feels it now has the right to negotiate them on its own.

A spokesman for the homebuilders group, one of the eight associations, said the AGC deliberately staved away from the negotiations. The AGC's 18-man negotiating staff was sufficiently large to cover all meetings, President McKenzie explained.

What lies ahead?

A union representative contends the carpenters are legally prohibited from signing "any single-shot contracts." (This is an argument that has been used elsewhere to the disadvantage of homebuilders who have sought a voice in collective bargaining dominated by the AGC.)

"For over 20 years the AGC has been one of the groups who always bargained together," the union representative said. "And now they want to pull out, even though they are offering us almost the identical contract. In 1952 they even had it written into the contract that all employers would bargain as a single unit."

Union members have been authorized to strike against AGC members because of the association's refusal to accept the results of the joint bargaining.

Labor in Brief . . .

• **Charges bias**—A two-day teamster strike over "coercive" highway department tactics marked the first labor dispute on Vermont's interstate highway projects. Union claims the department is threatening contractors with loss of road jobs if they unionize. It has asked the governor to investigate.

• **A big increase**—Plumbers in the San Francisco Bay area have won a $1.05 hourly wage increase in a new three-year labor contract. They received 40 cents of it July 1 and will get two more annual installments of 40 cents and 25 cents each. New scale is $4.68.

• **Who's the thief?**—Union workers on Webb & Knapp's Denver Hilton Hotel project pulled a one-day wildcat strike to protest the search of lunch boxes by detectives. W&K hired the sleuths to help stop thefts of building materials allegedly amounting to $6,000-$8,000 in May.

• **Promotes industry**—Carpenter, laborer and teamster union locals in Rhode Island have court permission to invest up to $10,000 from health and welfare trust funds in the Business Development Co. of Rhode Island. The company promotes new industry through loans, which it guarantees.

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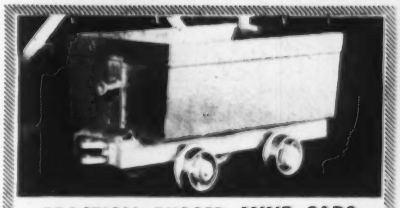

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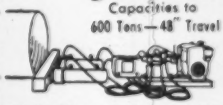

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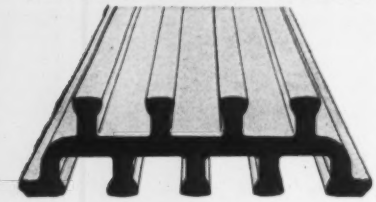

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ESG Start Delayed

EAA inaction slows, but won't halt, ESG effort

Engineers and Scientists Guild has run into another delay in its up-again-down-again attempt to become a national federation of engineering unions.

Prospective ESG members had pinned their hopes on a proposal to make Engineers and Architects Association, in California, the parent organization for ESG. But action was sidetracked by political differences at a recent EAA convention.

Now other prospective ESG members plan to go ahead without EAA, even though it was the largest prospective member.

At the last ESG steering committee meeting, EAA suggested that it decentralize power to its five chapters. It would then become the framework for ESG (ENR May 7, p. 103).

The EAA convention never acted on the proposal, which required constitutional changes. The convention's time was taken up by a power struggle that saw Stanley Nelson lose his bid for re-election as EAA president. He was replaced by Leon Turner of the Civic Center Chapter, which represents employees of the Los Angeles Water and Power Co. and the City and County of Los Angeles.

EAA will reconvene on July 11 to consider the proposed changes in its constitution. Mr. Turner expects the convention to pass resolutions that will put EAA on the road to becoming a national organization, as proposed. But any changes would probably not take effect until the end of the year.

Other ESG members, already impatient over many delays, are unwilling to wait any longer for EAA cooperation. "We are going ahead with plans to activate ESG," says Charles Hall, interim president of ESG and president of the Engineers Association at Sperry Gyroscope Co., Long Island, N. Y.

If EAA wants to come in later, they're welcome to, Mr. Hall said. But it will be more under our conditions and less under theirs, he added.

"Should ESG get going first, I would have no objection to joining under their banner," said Leon Turner.

Other prospective members of ESG, which takes in professional engineers and technicians, are: Engineers Association at Sperry, ESG section at Lockheed Aircraft, and the Railway Technical Engineers. Also interested are the Engineers and Scientists of California, and the Tennessee Valley Authority's Engineers Association.

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An Optical Micrometer Theodolite, fro Cooke, Troughton & Simms Ltd., Britain oldest maker of surveying instruments, h been introduced in the United States.

The 9-lb. Model V308 can be read direct to 20 sec. of arc and by estimation to 5 se The instrument features brilliance of field its circle-reading microscope, high magnific tion of the graduation system and easy rea ing. The telescope is of the internal-focusir type with a spiral focusing eyepiece.

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Edward F. Carlough

Sheet Metal Workers Name A New Yorker President

Edward F. Carlough, a pioneer in the development of union health, welfare and pension plans in the construction industry, was elected general president of the Sheet Metal Workers' International Association last month.

He succeeds Robert Byron, who had headed the union during the 20 years prior to his death in May.

Mr. Carlough is a native of New York and has been a member of the sheet metal workers union for 36 years. After serving as president and business agent of Local 28 in New York City, he became secretary-treasurer of the international union.

During Mr. Carlough's tenure of office in New York, Local 28 became the first of the sheet metal workers' local unions to establish a welfare and a pension plan. Welfare funds for the benefit of the union's members now exist in every state. Average employer contribution is 9.03 cents per manhour worked. More than $50 million has been paid out in benefits since the welfare programs were established.

Mr. Carlough served on the Wage Adjustment Board during the Korean war and was instrumental in getting the Wage Stabilization Board to exempt welfare contributions from the national wage freeze. It was that exemption that gave the fringe benefit movement its biggest impetus.

David S. Turner, 41, of Salt Lake City succeeds Mr. Carlough as secretary-treasurer of the international union. Mr. Turner has been an international organizer since 1956.

The Sheet Metal Workers' International Association claims to have over 100,000 members.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record
P.O. Box 12, New York 36, N. Y.

Bids: July 23, 1959

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., advanced standard time, which is nine-thirty o'clock A. M., eastern standard time, on the 23rd day of July 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name
DISTRICT No. 7, R. W. SWEET, District Engineer, 141 Van Duzee Street, Watertown, New York		
St. Lawrence (Rtes. 37 37A & 87)	FATS 59-11	City of Ogdensburg: Route 37 Arterial, FAC 37-16 Ogdensburg Route 37 Connections, FASH 37-19 Ogdensburg-Morristown, Pt. 1 S.H. 878 Ogdensburg-Waddington, Pt. 1 S.H. 5497 Ogdensburg-Waddington, S.H. 9357 Project U-6503(8)

Miles	Type	Deposit	Estimated Cost of Work
6.13	Traffic Signs and Delineators	$1,900 Plans $5	$11,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.
In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.
Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.
The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.
Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.
Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".
The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: July 16, 1959.

Board of Education—Bureau of Construction
Notice Re: Prequalification Forms for Contractors

APPROVED AS TO FORM
Acting Corp. Counsel
NOTICE IS HEREBY GIVEN THAT
The Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y. will receive applications for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows:
general construction, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures and heavy kitchen and cafeteria equipment.
MANHATTAN
Public School 128, Audubon Avenue, bet'n W. 168th and 169th Streets.
Prequalification application forms will have to be secured from and must be submitted to the Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York.
Bids when advertised, will be received from prequalified bidders only.
Time for submitting prequalification applications by contractors will expire on Thursday, July 16, 1959.
WILLIAM H. CORREALE
Superintendent of School Buildings
Design and Construction
Dated: June 25, 1959
Starting: Monday, July 6, 1959
Five (5) Days.

Bids: August 18, 1959.

Philadelphia, Penna.
Procurement Department
Water Department

Sealed bids will be received in Room 313, City Hall Annex, until 2:30 P.M. (D.S.T.) on Tuesday, August 18, 1959, and opened at that time, for Bid No. 2331—Work No. S-2502-Fls.
Wakeling Street Relief Sewer, Stormwater Conduit and Relay of Water Main in Van-kirk Street between the Delaware River and Edmund Street.
PRINCIPAL ITEMS OF WORK
144 lin. ft. of Twin 8'6" x 12'6" reinforced concrete stormwater conduit at river outlet—cofferdam and on piles.
2560 lin. ft. of Twin 8'6" x 12'6" reinforced concrete stormwater conduit (various conditions of design—on piles and not on piles).
Construction of above sewer at two railroad locations.
170 lin. ft. of 72" I.D. x 2" steel water pipe (removal of old water main and lowering to new position of above steel main).
Proposal forms, questionnaires and specifications may be obtained from the Water Department, in Room 1132, City Hall Annex, Juniper Street and Filbert Street, Philadelphia 7, Penna. Blueprints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Company, 1230 Arch Street, Philadelphia 3, Penna.
No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, 1113 City Hall Annex, at least one (1) week prior to the date of opening bids.
Each proposal must be accompanied by security in form and amount as set forth in the proposal form.
Michael H. Sura, Commissioner

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OFFICIAL PROPOSALS

Bids: July 16, 1959

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Public Buildings Law, Canal Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock a.m., advanced standard time, which is nine-thirty o'clock a.m., eastern standard time, on the 16th day of July, 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 333 Broadway, Albany 1, New York						
Essex, Rensselaer & Washington (Rte. 9, 22, 73, 67, 7 & 22A)	R.C. 59–85	No. Hudson-Euba Mills, S.H. 5181, Br. #1; Essex-Willsboro, S.H. 1641, Br. #1; Keene Valley-Holts Cors., S.H. 8478, Br. #3; Valley Falls Village Conn., S.H. 8520, Br. #1; Raymertown-Hoosick Pt. 2, S.H. 5354, Br. #3, & Middle Granville-Hampton, S.H. 1937, Br. #1.	....	Cleaning and Painting 6 Bridges	$1,100 Plans $5	$19,000
Greene (Rte. 23)	B.A. 59–1	West Approach; Rip Van Winkle Br.	0.35	Asphalt Concrete Pavt.	$2,100 Plans $5	39,000
Rensselaer	FASS 59–14	West Sand Lake-Poestenkill-Cropseyville Pt. 3 Co. Rd. Proj. S-486(3)	2.08	Asphalt Concrete Pavt. Prestress. Conc. Bridge 1 Span 54'	$25,000 $14,000	448,000
Schenectady (Rte. 7)	R.C. 59–73	Central Bridge-Quaker Street Pt. 2, S.H. 1029; Quaker Street Pt. 2, S.H. 105; Duanesburg-Quaker Street, S.H. 5551	7.84	Asphalt Concrete Pavt.	Plans $5	258,000
Warren (Rte. 9N)	R.C. 59–97	Lake George Village, S.H. 843 Lake George-Bolton Landing, S.H. 418	6.67	Asphalt Concrete Pavt.	$12,000 Plans $5	215,000
Washington (Rte. 4)	FARC 59–66	Hudson Falls Village, S.H. 1080. Sandy Hill-Fort Ann, S.H. 803 Proj. F-413(6)	8.83	Asphalt Concrete Pavt.	$32,000 Plans $5	570,000
Washington (Rte. 149)	R.C. 59–98	Hartford-Granville, S.H. 1783	6.25	Asphalt Concrete Pavt.	$10,000 Plans $5	182,000
DISTRICT No. 3, Earle E. Towlson, Acting District Engineer, 333 E. Washington St., Syracuse, New York						
Cayuga (Rte. 38A)	FARC 59–53	Auburn-Owasco, S.H. 614 Proj. F-642(3)	6.03	Asph. Conc. Pavt. = 6.01 Mi. Misc. Work = 0.02 Mi. Extend Exist. Conc. Slab Br. 1 Sp. 22', Prestress. Conc. Beam Br. 1 Span 62'	$63,000 Plans $5	1,148,000
Oswego	M 59–6	Oswego Grain Elevator	....	Asph. & Cem. Conc. Pavt. on Pier Area	$1,000 Plans $10	18,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Genesee (Rte. 5)	FARC 59–93	East Pembroke-Batavia, S.H. 586; East Pembroke-Pembroke Pt. 1, S.H. 5020; East Pembroke-Pembroke Pt. 2, S.H. 5090 Proj. F-933(4)	9.04	Asph. Conc. Pavt. = 9.02 Mi. Misc. Work = 0.02 Mi.	$28,000 Plans $5	496,000
Genesee & Orleans (Rte. 5 & 18)	R.C. 59–88	Oak Orchard Pt. 3, S.H. 394, Br. #3; East Pembroke-Batavia, S.H. 586, Br. #2	....	Cleaning & Painting 2 Bridges	$800 Plans $5	15,000
Livingston & Wyoming (Rte. 20A & 39)	R.C. 59–94	Perry-Pine Tavern Cors. Pt. 1B and Pt. 2, S.H. 8433 Perry Center-Moscow Pt. 2, S.H. 1248	5.75	Asph. Conc. Ty. 1A Pavt.	$15,000 Plans $5	271,000
Monroe (Rte. 65)	FARC 59–82	Clover Street, S.H. 294 Honeoye Falls-Pittsford Town Line, S.H. 502 Proj. S-462(2)	8.82	Asph. Conc. Ty. 1A Pavt. = 8.79 Mi. Misc. Work = 0.03 Mi.	$25,000 Plans $5	458,000
Monroe (Int. Tour. Rte. 490)	FIC 59–6 FAC 59–9	Interstate Rte. Conn. 580, Rochester City; Eastern Expressway Pt. 1, East City Line Interchange & City of Rochester; Outer Loop Art. Highway (Highland Ave. to Int. Rte. 580) Proj. I-1107(11) & U-1093(4)	0.94	9" Cem. Conc. Pavt. 2 @ 50' Var. Wide = 0.94 Mi. (Asp. Conc. Ty. 1A & Ty. 2A on Interchange) 4 Hy. Sups. Comp. I-Beams 4 Sp. 321.5', 3 Sp. 143.5'; 4 Sp. 182" and 1 Sp. 62"; 1 Hy. Sup. Comp. Deck Girder 2 Sp. 234.4'; 2 RR Sups. Comp. I-Beams 5 Sp. 381.6" and 3 Sp. 135'; 2 RR Sups. Thru Plate Girders 4 Sp. 332.7" and 1 Sp. 57"	$275,000 Plans $10	4,964,000
Monroe	FAC 59–8 FASH 59–14	Rochester City Outer Loop: East Ave.-Winton Rd. N. Pt. 2; Rochester Outer Loop: East Ave.-Winton Rd. N. Pt. 2 (Blossom Rd. to Winton Rd. N.) Proj. U-1097(5)	1.88 (2.12 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' Var. Wide = 1.88 Mi. Asph. Conc. Pavt. Ty. 2A = 2.12 Mi. 4 Hy. Sups. Comp. W-F Beams, 3 Sp. 167.5', 3 Sp. 150.5', 4 Sp. 193.4' & 4 Sp. 239.9' Reinf. Conc. Arch Br. 1 Sp. 26.2'	$179,000 Plans $10	3,256,000
Monroe (Rte. 253)	FARC 59–101	Henrietta Station-South Arab Street, S.H. 1639 Proj. S-562(1)	3.04	Asph. Conc. Typ. 1A Pavt.	$12,000 Plans $5	222,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Chautauqua (Rte. 17J)	FARC 59–96	Chautauqua-Mayville, S.H. 1617 Proj. S-537(1)	0.89	Asph. Conc. Pavt. = 0.84 Mi. Misc. Work = 0.05 Mi.	$15,000 Plans $5	263,000
Erie (Rte. 33)	FARC 59–92	Genesee Street Pt. 3, S.H. 1214 Proj. F-377(18)	0.19	Asph. Conc. Pavt. = 0.17 Mi. Misc. Work = 0.02 Mi.	$4,000 Plans $5	67,000
DISTRICT No. 7, Robert W. Sweet, District Engineer, 141 Van Duzee Street, Watertown, New York						
Jefferson (Int. Tour. Rte. 81)	FITS 59–10	Interstate Rte. 505 Sect. 7C-1, F.I. S.H. 57–2; Interstate Rte. 505, Sect. 7AB-3, F.I. S.H. 57–21; Adams-Henderson Pt. 1, S.H. 183; Adams Village Railroad St. S.H. 181 Proj. I-81-3(12)140	6.58 (0.54 Acc.)	Traffic Signs & Delineators	$1,500 Plans $5	26,000
Jefferson (Rte. 11 & 37)	FATS 59–9	Watertown-Theresa Pt. 1, S.H. 565; Watertown-Philadelphia Pt. 1, S.H. 5651 Proj. U-F-372(6)	1.03	Traffic Signs	$1,400 Plans $5	25,000
DISTRICT No. 8, Kurt F. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Orange	FASS-RC 59–19	Slate Hill-Middletown Co. Rd. 49 Project S-822(2)	4.44	Bit. Double Surf. Treat. Graded Gravel	$19,000 Plans $5	331,000
Ulster (Rte. 208)	FARC 59–83	Wallkill-Ireland Corners, S.H. 8262; Ireland Corners-New Paltz, S.H. 9203 Proj. F-416(5); F-613-12)	5.38	Asph. Conc. Pavt. = 5.35 Mi. Misc. Work = 0.03 Mi.	$50,000 Plans $5	920,000
Westchester (Rte. 9)	FAC 59–7	City of Peekskill, U. S. Route 9 Arterial Highway Proj. F-394(16)	1.72	Asph. Conc. Pavt. Rehabilitation Rig. Frame Steel Viaduct 6 Sp. 502'; Rehabilitation Rig. Frame Encased I-Beam, 1 Sp. 47.9'; Rehabilitation I-Beam 2 Sp. 82.8'	$15,000 Plans $5	276,000
DISTRICT No. 9, Joseph C. Frederick, District Engineer, 71 Frederick Street, Binghamton, New York						
Delaware (Rte. 17)	R.C. 59–86	Deposit-Hales Eddy, S.H. 5045	3.05	Asphalt Conc. Pavt. Repairs to Exist. Bridge 226.5' Span.	$8,000 Plans $5	148,000
Otsego (Rte. 205)	R.C. 59–95	West Oneonta-Hartwick, Pt. 2, S.H. 8387	2.30	Asph. Conc. Pavt. Repairs to Exist. Bridge 26' Span	$8,000 Plans $5	136,000
Otsego (Rte. 28)	R.C. 59–99	Schuyler Lake-Cooperstown Pt. 2, S.H. 8333	2.04	Asph. Conc. Pavt.	$9,000 Plans $5	152,000
DISTRICT No. 10, M. E. Gould, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau	B.P. 59–73	Atlantic Beach, Town of Hempstead	1.80	Beach Protection (Artificial Beach Nourishment)	$15,000 Plans $10	288,000
Suffolk (Rte. 25A)	FARC 59–87	Smithtown-Port Jefferson, S.H. 5232A Proj. S-430(4)	0.35	Asph. Conc. Pavt. = 0.09 Mi. Drainage & Misc. Work = 0.26 Mi.	$10,000 Plans $5	177,000

(Continued on the following page)

OFFICIAL PROPOSALS

(Continued from preceding page)

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisons of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

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Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

Bids: July 6, 1959.

New York State Road Work

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Standard Time on July 16, 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON CROSS BRONX EXPRESSWAY, MAJOR DEEGAN EXPRESSWAY TO EDWARD L. GRANT HIGHWAY, F. A. I. ROUTE 511, PROJECT I-1084(28), ITEM 54, BRONX COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-142.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.

(b) Mr. M. E. Goul, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, New York.

(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

OFFICIAL PROPOSALS

The Engineer's Estimate of cost for this work is $33,425.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders."

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

Bids: July 21, 1959.

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS FOR CONSTRUCTION OF THE 345 KV TRANSMISSION LINE BETWEEN NIAGARA SWITCHYARD AND ROCHESTER SUBSTATION FROM NIAGARA COUNTY TO MONROE COUNTY, NEW YORK
SPECIFICATIONS NO. PA-9-2
CONTRACT AL-2

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for the construction of the 345 KV Transmission Line Between the Niagara Switchyard and the Rochester Substation, From Niagara County to Monroe County, New York, until 10:30 A. M. Eastern Daylight Saving Time, on the 21st day of July, 1959, at the Authority's Office, 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are estimated as follows:

Clearing Right of Way	150 Acres
Chemical Treatment of Right of Way	150 Acres
Erection of Steel Tower Structures	2800 Tons
Stringing Bundled Conductors and Ground Wire	70 Miles

The major items of material will be furnished by the Authority.

The Construction of the Transmission Line shall be completed on or before July 1, 1961.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which shall be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

U. S. Government

Sealed bids for building extension at the U. S. Post Office, Haddonfield, New Jersey, will be received until 2:00 P.M., EDST, August 4, 1959, and then publicly opened. Bidding materials may be obtained from the Business Service Center, Ground Floor, General Services Administration 250 Hudson Street, New York 13, N. Y., or from the Custodian of the Building where the work is to be done.

Read the Official Proposal Columns of

ENGINEERING NEWS-RECORD

This Week and Every Week

U. S. Government

United States Department of Commerce, Bureau of Public Roads, July 2, 1959. SEALED BIDS will be received at the office of the Inter-American Highway Division, Bureau of Public Roads, Room 3069, General Services Building, Washington 25, D. C., until 2:00 p.m. E.D.T., August 6, 1959, for the construction of Rama Road Project R-3C on the Rama Road in the Republic of Nicaragua. The project consists of the construction of 6 steel I-beam bridges and one steel Deck Truss bridge with approach grading between the Muhan and Piedras Grandes Rivers. Bids will be considered only from United States firms, Nicaraguan firms or other bonafide highway contracting firms doing business within the Inter-American countries of Guatemala, El Salvador, Honduras, or Costa Rica which shall be principally owned by citizens of the country in which they do business and which shall have an acceptable record of performance on highway construction in their respective countries. The approximate quantities of the major items of work are: 8,869 cu. yds. uncl. excavation for structures, 4,269 cu. yds. Class "A" Concrete, 539,120 lbs. reinforcing steel, 1,459,930 lbs. structural steel erected, (steel furnished by Government). One set of Plans, Specifications and Proposal Forms will be furnished free to prospective bidders upon request at the address given above, or at the Inter-American Highway District Office, Bureau of Public Roads, 203 Carlos Palazio Bldg., Calle 5a N., Managua, Nicaragua. Additional sets of plans may be purchased for $25.00.

Paul F. Royster, Asst. Commissioner for Operations

Sealed bids will be received in the office of the Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone, until August 28, 1959, and at that time publicly opened, for the following: Construction of three masonry schools including furnishing of equipment, Elementary School, Diablo Heights, 15 rooms; Elementary School Los Rios, 21 rooms; Junior High School, Diablo Heights, 11 rooms; also 29 masonry housing units, La Boca, Canal Zone. Plans and specifications are available for examination in Procurement Office, Panama Canal Company, 21 West St., New York 6, N. Y. Complete sets of data can be obtained upon payment of $50.00 deposit which will be refunded when data are returned. For further information call Bowling Green 9-5380, extension 73. Reference PC 59-78.

Sealed bids will be received in the office of the Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone, until August 21, 1959, and at that time publicly opened, on the following work: Replacement, or modernization of all exterior lighting systems of three locks with 20,000 lumen uncontrolled-light fluorescent luminaires mounted on 20 ft. aluminum poles. 550 poles will be required. Also, illumination of Gaillard Cut; 42,000 ft. long with two types of controlled-light fluorescent fixtures, high mounted type, 400 watts, 30 ft. above water spaced 125 ft. apart, and low mounted type, 200 watts, 8 ft. above high water level, 65 ft. apart. Also required will be transmission lines, substation distribution lines and automatic controls. Plans and specifications are available for examination in Procurement Office, Panama Canal Company, 21 West St., New York 6, N. Y. Complete sets of data can be obtained upon payment of $25.00 deposit. For further information call Bowling Green 9-5380, extension 73. Reference PC 59-79.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5216) will be received at Denver, Colorado, until 2 p.m., August 6, 1959, for furnishing six (6) 7.0-foot by 10.5-foot, hydraulically operated, outlet gates, with conduit liners for Glen Canyon Dam, Colorado River Storage Project, Arizona-Utah. Delivery is desired within 390 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Sealed bids for mail-flo equipment, Phase III, at the U.S. Post Office & Annex, (33rd St. & 8th Ave.), New York, N. Y., will be received until 2:00 P.M., EDST, July 21, 1959, and then publicly opened. Bidding material may be obtained after June 30, 1959 from the Business Service Center, General Services Administration, 250 Hudson Street, New York 13, N. Y.

EMPLOYMENT OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

JULY 23RD ISSUE CLOSES JULY 13TH

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take 1/2 of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

OVERSEAS DESIGN ENGINEERS

ONE CIVIL & STRUCTURAL
ONE MECHANICAL
on
CONCRETE ARCH DAM
POWER PLANT
and
TRANSMISSION SYSTEM

Men with degree and substantial applicable experience required to head design sections in Bangkok, Thailand. Must pass physical examination.

- 20-MONTH CONTRACT
- BASE SALARY
- OVERSEAS DIFFERENTIAL
- COMPLETION BONUS
- VACATION ALLOWANCE
- FAMILY QUARTERS
- FAMILY TRANSPORT OVERSEAS
- INSURANCE AND MEDICAL CARE

Openings also available in Denver for graduate engineers with three to five years experience in Civil, Mechanical and Electrical Design.

Send complete resume of education and experience, including salary information and date available to:

ENGINEERING CONSULTANTS INC.
1940 W. MISSISSIPPI AVE.
DENVER 23, COLORADO

ELECTRICAL DESIGNER

Require man experienced in designing conduit plans, cable systems, physical layouts, wiring diagrams, lighting systems, and other electrical features of hydroelectric powerplant design. Board work. Send resume to Mr. James E. Collins, Personnel Manager.

HARZA ENGINEERING COMPANY
400 W. Madison Street Chicago 6, Illinois

BUILDING DESIGNERS

Positions available in consulting firm for Engineers, Architects and Architectural Draftsmen experienced in building design. Send personal information and experience record to:

STANLEY ENGINEERING COMPANY
Hershey Building Muscatine, Iowa

DRAFTSMAN

5 Yrs. Min. Experience. Structural steel detailing and plant layout. Country location, approx. 60 miles from N.Y.C. in N.W. Section of New Jersey.

WILLIS, PAUL & PROCTOR, INC.
U.S. Route 206, Branchville, N. J.
Phone: Branchville 5851

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Resident Engineer Wanted. Graduate engineer with experience in supervision of construction on water, sewerage, steam power and/or building construction. Location generally midwest, but assignments may be to other areas of U. S. Established midwest consulting engineering firm. Reply in detail to P-1293, Engineering News-Record.

Experienced Architectural Draftsmen. Excellent opportunity with established consulting firm in Middle West. State education, experience and required salary. Reply to P-1545, Engineering News-Record.

Construction Superintendent experienced in all phases of large & heavy building projects. Submit detailed resume of experience and salary desired. P-1927, Engineering News-Record.

Wanted: Civil Engineer, Experienced, field, permanent position, growing construction company, near Poughkeepsie, New York. P-1896, Engineering News-Record.

Wanted: Estimator and Field Engineer, experienced, permanent position, growing construction company, near Poughkeepsie, N. Y. P-1921, Engineering News-Record.

Experienced Estimating Engineer — familiar with general contracting, semi-heavy and industrial construction, seawalls, docks, bridges and coffer-dams. Permanent position for right man—with established construction company in West Palm Beach, Florida. Salary dependent upon qualifications. Send resume to The Murphy Construction Co., P. O. Box 825, West Palm Beach, Florida.

Chief Engineer-Estimator. Well known and established Massachusetts corporation desires man qualified by experience and education for estimating and prosecution of highways, bridges, foundation, dams, etc. Please submit resume and present salary. P-1991, Engineering News-Record.

Reinforcing Steel Estimator for growing Bar Fabricator. Good starting salary with usual benefits. Modern Facilities. Apply P-1993, Engineering News-Record.

Civil engineers and civil draftsmen with 2 to 3 years office experience for responsible permanent position with progressive consultants in San Diego rural area. Salary range $500. to $800. Send full resume and availability to P-1968, Engineering News-Record.

Project Manager, highway and railroad, with experience in supervision of jobs in the one to four million dollar size, including excavation, paving, bridges, utilities. Work in Ohio-Indiana area. Submit resume of qualifications and salary required. P-1977, Engineering News-Record.

Associate and Assistant Professors for fields of advanced dynamics, advanced strength, and elasticity. Also have opening for graduate student as half-time instructor. Engineering Mechanics Dept., Kansas University, Lawrence, Kansas.

Wanted at once City Planning Engineer by the City of St. Joseph, Missouri. Population approximately 87,000. Young graduate civil engineer with City Planning experience or recent engineering graduate with City Planning major. Give complete resume and salary expected in first letter. Write to Mayor Arthur J. Meers, City Hall, St. Joseph, Missouri.

• POSITIONS VACANT

Erection Engineer: Graduate preferred — Permanent position with large N. E. Erector. State salary, resume, and starting date in reply. P-2018, Engineering News-Record.

Engineer-Estimator to work out of Omaha, Nebraska on heavy construction and highway estimates. Submit resume of qualification and salary expected. P-1973, Engineering News-Record.

Construction Superintendent experienced in Government work for large contract in Central Kansas. Send complete resume and salary desired to The Ferber Co., 16 Johnson Ave., Hackensack, N. J.

Construction Project Administrator experienced in Government contracts to handle shop drawings, expedite subs, coordinate, etc. for contract in Central Kansas. Salary $150.00 per week. Send complete resume and salary desired to The Ferber Co., 16 Johnson Ave., Hackensack, N. J.

Experienced Estimator wanted by West Coast firm engaged in General Construction of Commercial and Industrial work. Permanent position. Salary open to right man. Registered Engineer preferred. Send complete resume stating expected salary. P-1889, Engineering New-Record.

Design Engineers: 25 to 50 years. Graduate, registered. Thorough experience required in all phases of detailed design and estimating for municipal construction projects, particularly storm and sanitary sewers. $7075 to $8410. Qualified graduates considered for Jr. Design Engineers, promotion following registration. $6365 to $7717. Permanent with automatic advancement; bi-weekly salary; paid vacation; sick leave; excellent retirement plan. Submit detailed resume of education, background, experience, references, and date of availability to: Director of Public Service, City of Middletown, Ohio, P. O. Box 530.

Structural Engineer with pleasing personality plus structural design or construction experience for promotional and client contact in eastern United States. Prior client contact experience not required though desirable. Salary open. Send detailed resume to Buchart Engineering Corp., York, Penna.

Cement Chemist: To conduct both chemical and physical tests of Portland Cement for determining its compliance with ASTM and Federal Specifications on long paving program. Minimum requirements: BS degree, 3 years experience in similar position. P. O. Box 146, Lombard, Illinois.

Construction Superintendent, C. E. Missouri. Must be experienced Public Works. State education, experience, references, salary desired. P-2067, Engineering News-Record.

Assistant Superintendent, Missouri. Must be experienced Public Works. State education, experience, references, salary desired. P-2074, Engineering News-Record.

Construction Superintendent, C. E. Wisconsin. Must be experienced Public Works. State education, experience, references, salary desired. P-2079, Engineering News-Record.

Assistant superintendent, Wisconsin. Must be experienced Public Works. State education, experience, references, salary desired. P-2077, Engineering News-Record.

Construction superintendent, Little Rock, Arkansas. Must be experienced Public Works. C. E. State education, experience, references, salary desired. P-2084, Engineering News-Record.

Assistant superintendent, Little Rock, Arkansas. Must be experienced Public Works. State education, experience, references, salary desired. P-2088, Engineering News-Record.

• POSITIONS WANTED

Reliable man 35 years in construction. Experienced in rock blasting and sewer excavation and tunneling. Would like position in supervisory capacity. Salary $18,000. Write A.B. Izzo, 827 Morris Park Avenue, Bronx, New York.

Sales Engrg. or Management Opportunity Wanted by P.E., BSCE, Age 31. Experience: 3 yrs. hvy. industrial constr. field engr., 3 yrs. responsible structural design. PW-1926, Engineering News-Record.

Materials and Soils Engineer—BSCE—Over 10 years experience in construction of highways, toll roads and dams with both consultants and public agencies. PW-1985, Engineering News-Record.

(Continued on opposite page)

• POSITIONS WANTED
(Continued from opposite page)

Young Civil Engineer-2 years general field experience. Desires heavy construction field work. Preferably overseas. PW-1938, Engineering News-Record.

Bituminous, Soil, Concrete Paving Technologist. ICS Graduate. 20 years with Tollroads, overseas air-ports, city streets, highways, dams field, office and laboratory. Single, 47. Immediately available. Expert in scientific design of asphaltic mixtures. A. B. Hart, 809 Arlington, Jackson, Miss. Phone FI-2-1239.

Teaching or advisory. PhD struct. eng. 10 years research and teaching experience. Past 6 years successful industrial design and consulting. Age 42. Present income $12-$15,000. Resume available. PW-1970, Engineering News-Record.

Const. Executive-Gen. Supt. Age 38. Managed Heavey const. Co. 12 yrs. Roads, Airports, earthmoving, foundations, etc. Estimating, organizing, completing. Negotiations for extras etc. Prefer to associate small or medium Co. to manage or take load off busy owner. Will relocate. $10-$15,000. PW-1983, Engineering News-Record.

Construction Executive and General Superintendent, 25 years experience in commercial, industrial, public buildings, and mass housing, experience includes all phases of construction, job management, purchasing, subcontracting, processing of claims, etc. Desire permanent relocation eastern U. S. PW-1006, Engineering News-Record.

Civil Engineer, 26, BCE'55, EIT-NY, Single, Navy CEC Officer. Heavy constr. exp. Seeks field position heavy constr. Loc. anywhere incl. o'vseas. Avail. Mid-Aug. PW-2006, Engineering News-Record.

Registered C.E. Many years const. experience. Desires position in field office of contractor in N.E.U.S.A. PW-2005, Engineering News-Record.

Civil Engineer, BS, 28, licensed, desires permanent position, with some field work, with small or medium sized contractor or allied organization. Experience includes 3 yrs. of steel and concrete design, preparation of plans, quantity take-off, detailed checking; 2 yrs. in Corps of Engrs. PW-2004, Engineering News-Record.

Construction Engineer with nation wide firm desires change. Age 30. Supervisory experience on industrial and commercial buildings. Some earth work. No degree but lots of experience. Will relocate stateside or foreign. PW-2013, Engineering News-Record.

Foreign or Domestic—Top level tunnel superintendent. Age 46—background of successful tunnels, shaft's, caissons, underground powerhouses, well versed cost wise, can get top production—help estimate. Resume on request. PW-2001, Engineering News-Record.

Supervising Engineer, Civil-Sanitary, 22 yrs. experience all phases; fluent Spanish; desire job in Venezuela, prefer Caracas. PW-1933, Engineering News-Record.

Construction Supt. General Construction. PW-8896, Engineering News-Record.

Contractor's Engineer, 52, BS in CE, P.E. N.J. Heavy Const: bridge piers, found., deep excav., form work, cost, take-off qtys., assist. with bid. PW-1928, Eng. News-Record.

Consulting engineer for foundations of buildings, bridges and highways. M.ASCE and A.C.I., 30 years experience in Europe and America in reinforced concrete especially in design and execution of heavy raft-mort-and pile foundations want collaboration with consulting or contractor films specialized in this field. As author of many scientific papers, published in the U.S.A. and Europe about modern methods of foundation design is also interested in research work of soil mechanics and foundation engineering. Tel.: New York City, Plaza 5-2263.

Field and layout engineer B.S.C.E. 18 years experience—steam plant, lock, dam, and building-supervision several parties—charge of civil, structural and architectural aspects of related construction. South preferred. PW-2029, Engineering News-Record.

Soils Engineer, B.S.C.E., B.S. Geology, age 28. Three years design, construction, testing and site investigation. Foreign experience. Desires design position with consulting or construction firm. PW-2081, Engineering News-Record.

Estimater and Project Manager. 7 years experience in civil, industrial and institutional construction. PW-2058, Engineering News-Record.

BCE, 28, 7 years experience, building construction—field and design. Seeks responsible position with opportunity. PW-2054, Engineering News-Record.

• POSITIONS WANTED

Field & Office Engineer, 18 Years Experience in equal amounts. Highway, railroad, utility design, estimating & bid preparation. Varied field experience; from 1st Order Survey work to Resident Engineer Heavy Construction. "Q" cleared. Completed (all) 7 foreign contracts and available 1st July. Foreign assignment preferred, will consider relocation in U.S. PW-2028, Engineering News-Record.

Const. Engineer, 38. General Const. including sewers, water-lines, earth & concrete works, estimating & supervising. Available any location. PW-2048, Engineering News-Record.

Civil Engineer, 26, married, very interested in earth and rock excavating equipment desires challenging job with contractor, equipment dealer or manufacturer. Since graduation in 1955, worked 6 months as equipment operator, 3 years in construction branch of Fed. Gov. on highway, tunnel, and channel improvement jobs and 6 months with Fed. Gov. making time studies of equipment performance. Will relocate—available on 3 weeks notice—resume on request. PW-2055, Engineering News-Record.

Heavy Equipment Supervisor, age 35, 17 yrs exp. dams, power plant, roads, preventive maint. Resume upon request. John C. Melton, Birdsong Road, Camden, Tennessee. Pho. LU 4-7901.

• POSITIONS WANTED

Mechanical engineer or designer; over twenty years diversified field and office experience, including supervision. Process, power, and other. Prefer field assignment, but office acceptable. Bob Mills, 219 N. Jefferson, Kittanning, Penna.

Chief Estimator-Engineer-Co-ordinator 12 years experience. Prefer firm doing commercial, industrial construction. Experienced with jobs for Atomic Energy Commission, Corp. of Engineers, and the Air Force. Presently employed but willing to relocate. PW-2076, Engineering News-Record.

Civil Engineer, MSCE, 10 years federal and municipal public works experience in administration, design, construction and maintenance of airbase, navigation, water resources, and municipal projects up to grades of Project Engineer, City Engineer, and Ass't Director of Public Works. Desire responsible administrative position. PW-2085, Engineering News-Record.

• SELLING OPPORTUNITY WANTED

Manufacturers Representatives Contracting Equipment, supply firms. Seeking lines. Detroit area. RA-2030, Engineering News-Record.

SEARCHLIGHT SECTION
CLASSIFIED ADVERTISING

Send New ADS or Inquiries to Class. Adv. of Engineering News-Record, P. O. Box 12, New York 36, N. Y., For July 23 Issue Closing July 20

FOR SALE

44 TON GENERAL ELECTRIC DIESEL ELECTRIC LOCOMOTIVE

LAMBERT BROS, INC.
RALPH E. MILLS & GORMAN, INC.
P. O. Box 723 Morgantown, West Virginia
Telephone: Masontown, W. Va.—Union 4-2021

FOR SALE

111M Marion Dragline, 130' of boom, two GM6-71 diesels, dragline bucket. Excel. cond. $10,000 recently put in the machine. Location Detroit, Mich. $53,000.

Parsons Trencher Model 221, diesel power, digs 12'6" deep, 42" wide, 3100 hours actual time. Excel. cond. $10,500, f.o.b. Lansing, Mich.

FS-2039, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication, Send to office nearest you,
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• BUSINESS OPPORTUNITIES

Medium sized eastern Consulting Engineering firm is interested in expanding its operations in the United States by merger or purchase of an established engineering practice. BO-1991, Engineering News-Record.

Mature Engineer Chemist wants to purchase one half interest in small engineering firm specializing in sanitary engineering, design and supervision of water and sewage works. BO-2050, Engineering News-Record.

Growing Engineering and surveying business too big for one man operation. Owner wants to associate with established or growing business. BO-2090, Engineering News-Record.

• WANTED

Anything within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of the thousands of men whose interest is assured because this is the business paper they read.

If there is anything you want that other readers can supply
OR . . . something you don't want— *that other readers can use—*
Advertise it in the
SEARCHLIGHT SECTION

MODEL 4500 MANITOWOC SPEEDCRANE

Serial #4566, complete with 140' Boom (45' bottom steel, 38' top aluminum, 37' center aluminum). Caterpillar D386 Diesel engine, air controls, full revolving fairlead, 25'9" crawlers, 60" crawler treads, 5 KW Koehler light plant complete with lights, one 20' aluminum boom insert, air windshield wiper; including bucket. Located in Florida.

Owner: C. B. HOPPE, Box 590, Palm Beach, Fla.
Phone: Temple 2-2479

WANTED

2 C.Y. Central Mix Concrete Plant or Batch Plant to pour 15,000 C.Y. of concrete. Automatic batching and recording not essential though acceptable. In reply please give complete description including age, manufacturer, condition, location, bin and silo capacity and price.

LEWIS CONSTRUCTION ASSOCIATES, INC.
Box 16, Goldsboro, N. C.

Price $9,000.00

Northwest Model 25—¾ c. y. Crane

40 ft. Boom 24" Crawler Treads. Pull Shovel Attachment $2,000.00 additional. Location Philadelphia, Pa.

O'BRIEN & REDMOND
Exton, Chester Co., Pa. Phone Foxcroft 3-7650

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Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.

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Established 1914
210 S. Canal St. Chicago (6), Ill.

GOING OUT OF BUSINESS SALE
By PUBLIC AUCTION

Pursuant to an Order by the Owners We will on . . .

SATURDAY, JULY 18, 1959—10:30 A. M. Offer for sale by PUBLIC AUCTION

BUFFALO CRANE COMPANY, INC.

Sale will be held on the premises of Sheridan Drive and Mill Street, Town of Amherst, 11 miles from downtown Buffalo, N. Y.

BROWNING TRUCK CRANE: Model W81, Serial No. 3683, 14 Whl, powered by Waukesha engine Model 6-SRKR, 6 cylinder, 25 ton capacity factory rated. Truck built by owner, powered by Mack-Lanova diesel Model EDI91, T77 Transfer case and 5 speed Brown Lipe transmission.

BROWNING TRUCK CRANE: Model T15, Serial No. 3783, 14 Whl, powered by Waukesha engine Model 6MZA, 15 ton factory rated with 3000 lb. counter weight added making Crane 20 ton rated capacity. Mounted on Hendrickson Truck, powered by 6 cyl. Waukesha engine Model 6-SRKR, Timken rear end.

BROWNING TRUCK CRANE: Type E. Serial No. 2553, powered by Climax Motor, Model KU. Mounted on Autocar truck Model G with tandem rear axles.

BROWNING TRUCK CRANE: Model T250, Serial No. 4193, 14 Whl, powered by Waukesha engine Model 140GK, 6 cyl. gas engine. Also a Twin Disc Torque Converter Model CF-100-19-TC-1L. This Crane is rated 25 ton capacity on manufacturer's carrier, present carrier built by owner rated capacity 35 ton. Truck powered by H B Cummins 6 cyl. diesel. Timken rear end Model 462, T77 Transfer case and Brown Lipe 5 speed transmission. This unit is like new. It has only been used to erect steel and drive piles.

Bucyrus-Erie MODEL 22-B, ¼ yd. International Diesel power backhoe and crawler Ser. #113909. Excellent condition.

Loraine 12-ton 10-wheel, gas engine, 8-wheel drive mobile crane, universal type, w/30' boom and 10' extension, with backhoe attachment, ¾ yd. cap. Model MC104—Ser. #25416.

TL 26, ¾ yd. (Crane), Loraine backhoe, diesel powered, caterpillar engine. Serial #26188, with backhoe attachment and ½ yd. and ¾ yd. buckets.

D6 74" caterpillar tractor diesel powered w/angle dozer blade and #46 hydraulic controls.

MOD. #2610 Gradall Tandem Drive.

HD7 Allis-Chalmers Bulldozer w/10" Garwood angle dozer blade. Serial #15053.

Lima 34, ¾ gal. backhoe and crane combination, diesel powered Serial #3812.

TD14 International, diesel powered w/Bucyrus-Erie angle dozer blade & w/T286 drill rig.

1952—38B—1½ yd. Bucyrus-Erie UD24, Intr. diesel motor, 28' digging boom, recently rebuilt, excellent condition. Ser. #92985.

Adams Grader, International diesel engine, w/12' blade.

Acme 10 ton three wheel gasoline roller.

Gas powered Parsons trencher.

Buckeye Trencher Mod. 120, Serial #96, w/GMC. Diesel engine.

MODEL 20 Elgin sweeper gasoline powered.

Fontaine 20 ton lo-bed 16' wheel trailer.

D-4—Hydraulic La Plante controls, straight dozer.

RD7 straight dozer, diesel power.

HD5 Allis-Chalmers loader.

Buyers, #83, ¾ yd. shovel—gasoline power.

Gallon grader #102 w/scarifier blade—UD14 Intr. engine.

Adams 4 speed travel loaders.

HT-4 loader.

Ingersoll Rand, Worthington, and Chicago 85, 105, 160, 210 and 315 twin stage, air cooled, electric starting, gasoline driven Air Compressors on pneumatic tires, all in excellent condition.

Chevrolet 1½ ton flat bed truck.

McKiernan-Terry: No. 7, steam pile hammer with slides.

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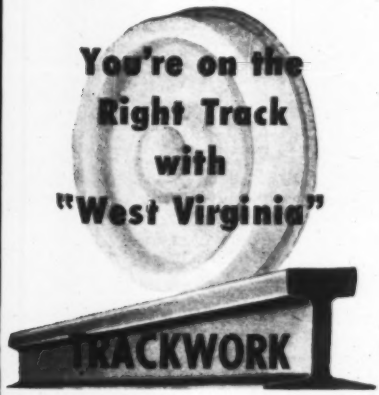

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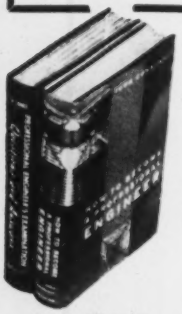

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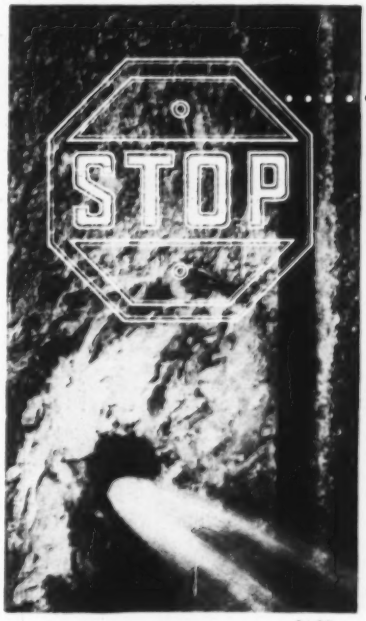

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A7 Steel Could Be Better

SHOULD THE YIELD-POINT REQUIREMENT of ordinary structural steel be increased beyond the present 33,000 psi minimum? This question, now under study by a committee of the American Society for Testing Materials, is highly controversial. Yet the answer may have a widespread effect on the construction industry (ENR July 2, p. 26).

A higher yield point can be considered ample justification for increases in allowable unit stresses in design, permitting less steel to be used for most structural members than do present design specifications. As a result, the cost of steel construction could be cut, and steel would be better able to compete with other structural materials.

Desirable as higher design stresses may be, however, the implications of a higher yield point in ASTM specification A7 for structural steel are not all favorable, and have led in the recent past to defeat of efforts to revise it upward. One drawback is the probability that the higher-yield-point steel will be more costly, perhaps offsetting the gains made by raising unit stresses. Another is the possible adverse effect on other characteristics of the steel, which might accompany changes in chemistry to obtain the higher yield point. Actually, however, some producers already turn out higher-yield-point A7 steel with satisfactory all-around characteristics, merely by controlling the chemistry and grain growth. Whether this better steel costs any more to produce is not definitely known.

One thing that the repeated defeat of efforts to revise the A7 specification makes clear is that standardization has some major disadvantages as well as advantages. A standard sets minimum requirements (usually low enough to be met by the most marginal producer), and there is a tendency for producers to barely meet the minimums (or for design to be based on this assumption, since the supplier generally is not known when the design is made). Furthermore, after producers are geared to a standard, it becomes very difficult to change it. So a standard not only tends to downgrade the material but also to stymie improvements.

Certainly the construction industry doesn't want to lose the benefits of standardization by having to specify special steels instead of standard A7. At the same time, it should not be satisfied with maintenance of the status quo when better construction materials can be had for the asking.

What can be done to break the impasse? An opportunity is at hand. It could be grasped if steel purchasers in large numbers would request ASTM to revise A7 to require a higher yield point, plus whatever improvements it is now possible to make in such other properties as weldability, toughness, ductility and fatigue strength. They might even assure steel producers that they are willing to pay a little more, if necessary, to get better steel. Plainly, only by insisting on better A7 steel can it be had and can progress be made.

Title I Troubles

THERE IS NO EASY WAY TO CLEAR SLUMS, but the federally assisted Title I program, more understandably referred to as the urban renewal program, is the most effective approach yet tried. In any event, before its inauguration, cities expended little more than wishes and hopes on slum clearance while now, under the spur of federal subsidy, nearly 400 of them have a total of 646 projects that have been approved and received at least some of the federal aid to which they will be entitled. This is worthwhile progress, and the opportunity to increase it should be maintained.

Some concern has been expressed that current Title I troubles in New York City might endanger the whole nation-wide slum clearance program. This is absurd. The troubles in New York are not greatly different from those elsewhere. Slum area residents who have to be relocated are dissatisfied. The fact that the land is sold to a private developer for a deflated price, thanks to the federal subsidy, causes protests, mostly from other developers who profess to have wanted the job. And there are the inevitable charges of favoritism and political payoffs in choosing developers.

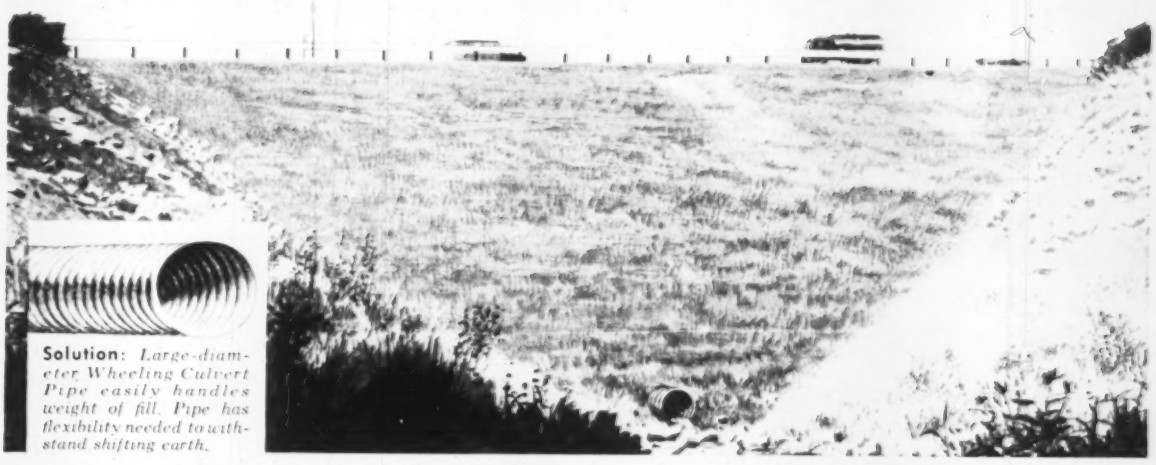
These criticisms cannot be avoided, but municipal slum clearance committees, of course, must be scrupulously careful that none of them is justified. In New York, where Robert Moses, who has a quarter of a century of honest, resultful public service to point to, heads the slum clearance committee, it is doubtful that the current criticism will prove harmful to the program. Mr. Moses, on the other hand, by following his typical course of devising his own rules to get a job done, adds a new facet to Title I troubles. Whereas in most if not all other cities the municipality clears the slum sites before it sells them, in New York the reverse is true. The developer buys the site first and assumes the clearance responsibility. In a few cases the developer has failed to carry out his bargain, in the meantime collecting rent from the area occupants.

This is the principal trouble in New York that is different from the situation in other cities. It seems largely unnecessary, but in any event it is not significant enough to warrant worry that the clamor over handling of slum clearance in New York will have a bad effect nation-wide. Slum clearance under Title I of the National Housing Act of 1949 is a worthwhile endeavor. Its administration will always generate protests, but they can be answered by the honest, sympathetic endeavors that have generally characterized the work so far.

METAL CULVERT PIPE BY WHEELING

Problem: *How to drain this deep draw without using costly bridge. Difficulty is increased because of shifting earth.*

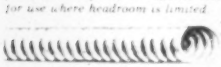
Have to drain deep, shifting fills?



Solution: *Large-diameter Wheeling Culvert Pipe easily handles weight of fill. Pipe has flexibility needed to withstand shifting earth.*

Use this flexible metal culvert pipe!

Wheeling Pipe Arch—a wide, comparatively flat-bottom type of corrugated metal pipe for use where headroom is limited.



Small-diameter Wheeling Metal Pipe—ideal for farm and home drainage requirements.

Although ordinary heavy, rigid pipe *looks* stronger, it often cracks and breaks under deep or shifting fill. *But not Wheeling Corrugated Metal Culvert Pipe!*

Flexible Wheeling Pipe adjusts to changing pressures. Amazingly strong because it uses the surrounding earth to help carry the load.

Wheeling Metal Culvert Pipe or Pipe Arch comes in copper-bearing steel or copper-bearing pure iron, plain galvanized or bituminous coated (with or without paved invert). Available in a wide range of gauges and diameters.

Ask your nearby Wheeling culvert plant, warehouse or sales office for full details. Wheeling Corrugating Company, Wheeling, West Virginia.

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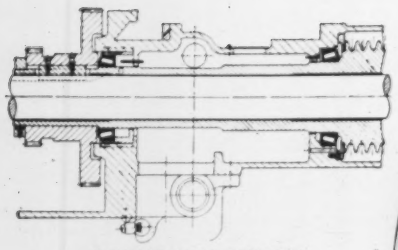
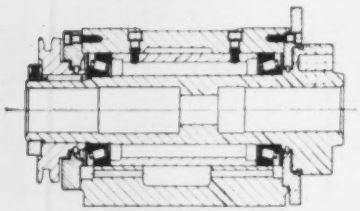
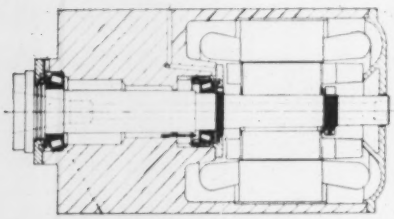


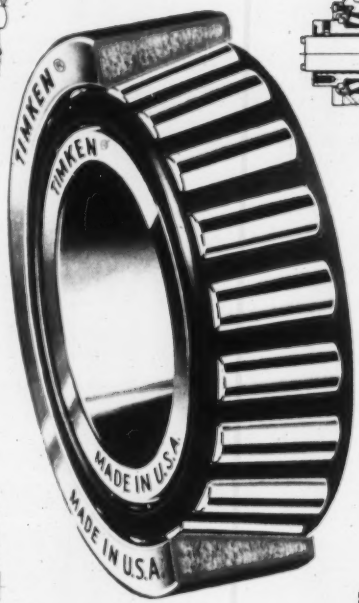
BORING MILL SPINDLE



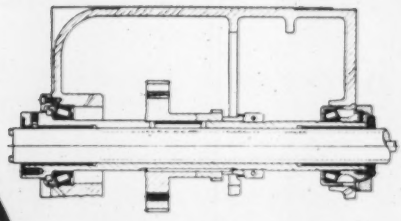
GRINDER SPINDLE WORK HEAD



MODERN HIGH SPEED WORK SPINDLE



TIMKEN "00" BEARING



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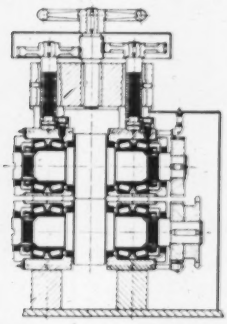

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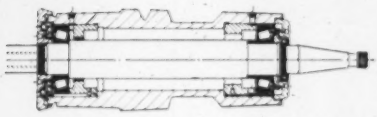

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